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AUTHOR Gilmour, Margy; McGregor, Cathy, Ed.
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ABSTRACT

One of the basic principles of the Language Development Approach is that students must learn the language necessary to understand, talk, and write about all subject areas in order to succeed in school. This book contains information about teaching primary school science in the Northwest Territories with lessons that emphasize language. The goals of the unit are to (1) develop student language proficiency; (2) provide opportunities for students to use language in many different situations and for many different purposes; (3) develop student listening, speaking, reading, writing, and thinking skills including the science process skills; and (4) expand student knowledge of the science concepts related to water. Following a section on resources (background information on water and related English materials--magazines, lists of children's books about water teacher's resources, films, etc.), lesson plans on four topics (properties of water as a liquid, forms of water, water is precious, and bubbles) are presented. Activity ideas for science/social studies, mathematics, language arts, music/poems/stories, art, physical education/movement, and special activities are suggested. Each lesson plan contains the following segments--exercises or activities: science concepts, English vocabulary, English sentence patterns, English language concepts, special materials required, concept development/language exposure, language practice, and application. Poems, songs, and stories on this subject conclude the guide. The lessons are appropriate for students whose first language is English as well as for students learning English as a second language. (PR/CW)

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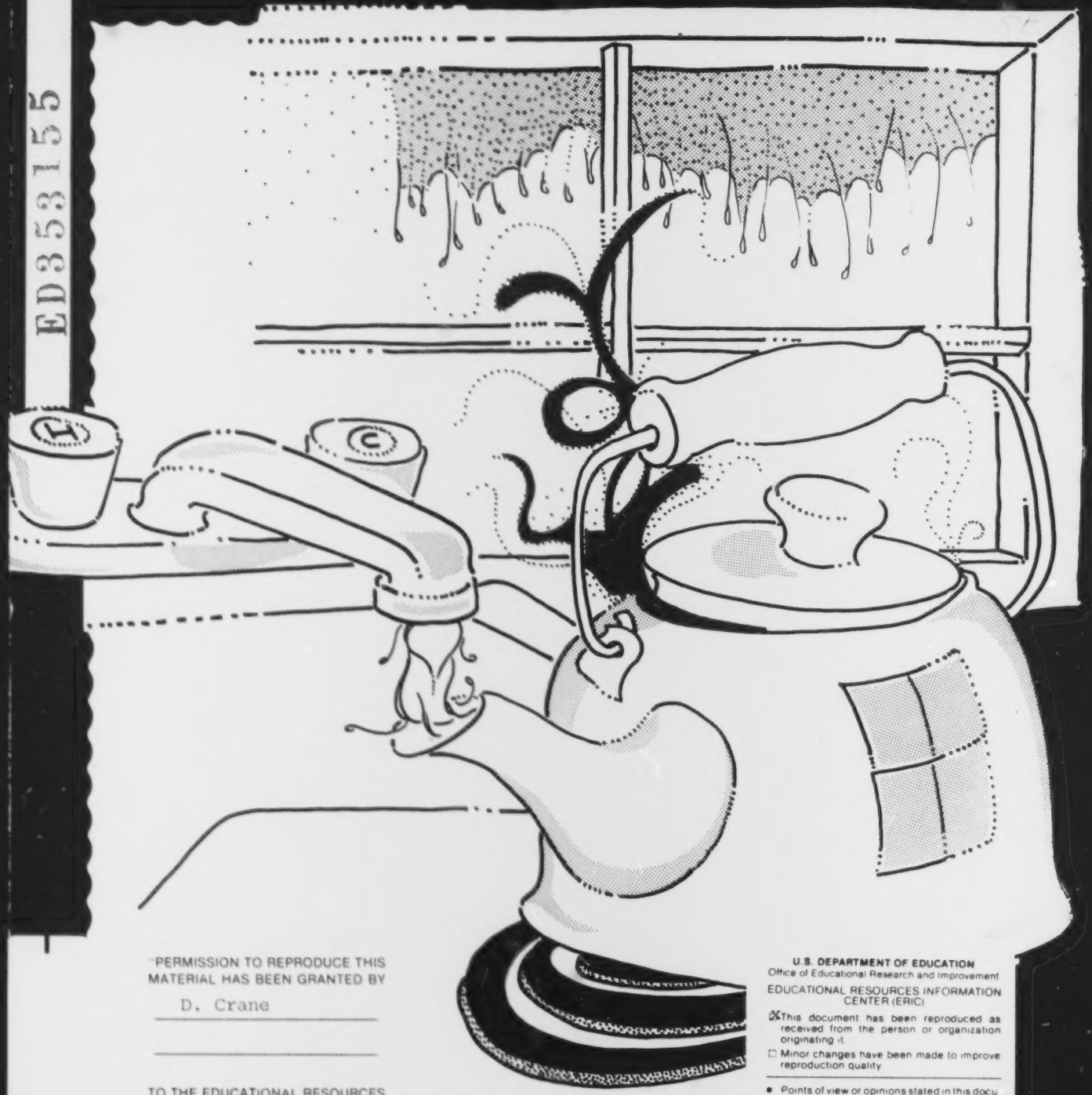

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WATER

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Water

A Language Development Unit for Science
Matter and Energy

Grade Three

Editor:
Cathy McGregor, Program Specialist, English

Author:
Margy Gilmour

Science Advisor:
Don Kindt, Program Specialist, Math-Science

SCHOOL PROGRAMS
DEPARTMENT OF EDUCATION
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FOREWORD

Parents, educators, and students themselves all recognize the importance of language in the school curriculum. In order to have appropriate language programming, students need to have their experiences, skills, knowledge, and particularly, the language they bring to school identified and used as the basis for the program. Language programs should begin with and build upon these strengths. Where a child is dominant in a language other than English, he should be taught in that language. In many communities in the N.W.T. that means that the language of instruction should be Inuktitut or one of the Dene languages. Students in these communities need to gradually learn English as a second language. In instances where students speak a dialect of English upon school entry, the school's role is to respect and make use of the language the students bring. The school program should also help those students extend their English proficiency by learning the language used in varied communication situations and the language necessary for success with the academic curriculum. The aim of language instruction, where applicable, and where possible, is to produce bilingual students.

Successful bilingual education requires good teaching in both languages. For many years northern educators have wrestled with the difficulties of teaching English with inappropriate commercial materials from the south. Teachers have been requesting assistance with how to most efficiently and effectively teach English as a second language/dialect. The Department of Education has determined that the Language Development Approach is the most suitable way to meet the needs of ESL/D students. The Department has developed these units for teachers to use in their classrooms and therefore expects teachers to implement these units unless they can identify and justify to their Superintendent something more appropriate for their students.

Eric Colbourne,
Assistant Deputy Minister,
School Programs.

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Bonnie Pugh and Cathy McGregor adapted Jim MacDiarmid's Language Development framework which forms the structure for each lesson.

Refining the format of and brainstorming activity ideas for the Language Development units involved the assistance of many northern educators. Members of the Teacher Committee who helped develop and pilot sample units included:

Paula Stein
Kathy Zozula
Jeanette Ireland
Mark Stainer
Judy Knapp
Margaret Jones
Lynda Mann
Janet LePrieur
Carole Lane
Heather Nolsoe
Sister Mary Edward Recoskie
Brenda Petersen
Bea Warren
Val Green
Joan Weaver
Jenny Turvey
Phyllis Kunder
Brenda Bellini
Lois Omson
Wendy Stephenson
Cathy Apawkok
Sister Mary Diane Cahill
Cathy (Baugh) Fair
Edna Elias
Elizabeth Biscaye
DiAnn Watson
JoAnne Deneron
Teri Arngna'naaq
Jerry Geran
Jerry Pare
Theresa Lachowski
Theresa Crane

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LANGUAGE DEVELOPMENT/SCIENCE UNITS

SCIENCE THEME	GRADE/YEAR		
	1	2	3
LIFE AND THE ENVIRONMENT*	----------LIVING/NON-LIVING THINGS ----------		
	Arctic/Sub-Arctic Land Animals	Birds	Marime Mammals (Whales)
	---------- PLANTS ----------		
	---------- POPULATION ----------		
	Bears/Polar Bears	Dinosaurs	Fish
MATTER AND ENERGY	Popcorn	Magnet	**Water**
	-------- ENERGY and ENERGY CONSERVATION ----------		
EARTH, SPACE AND TIME **	---------- SUN, MOON AND SHADOWS ----------		
	---------- AIR, AND AIR PRESSURE ----------		

* Other animals are covered under Social Studies topics: Fall, Winter and Spring.
Moose/Caribou Seals
Beaver/Muskrat Other fur-bearing animals
Rabbits

** Weather will be covered in a Science/Social Studies/Math unit.

TOPIC A - FORMS OF WATER

1. In what forms does water exist?
   Water exists in three forms: Solid
   Liquid
   Gas

2. How does water change from one form to another?
   Water can be changed to a gas or to ice when heat is added or taken away.

3. Can all changes be reversed?

4. Do all changes occur at the same rate?

TOPIC B - PROPERTIES OF WATER AS A LIQUID

1. What are the properties of water as a liquid?

   a) Water occupies space.
   b) Water takes the shape of its container.
   c) Water can be poured.
   d) Water can splash and form drops.
   e) Many things mix with water; some do not. Some objects show observable changes when placed in water. The water as well as the object may change.
   f) Surface tension is a property of water.
   g) Some objects float in water; some sink.
   h) Some materials soak up water; others do not.

TOPIC C - WATER IS CRUCIAL

1. Where can you find water?
   - Water is all around us, in the air and in the ground.
   - There is more water than land on the earth's surface.
   - Water is found in many things.

2. Why is water vital to our environment?
   - Water is necessary to all living things.
   - People use water in many different ways.

TOPIC D - BUBBLES

This topic may be developed as a mini-unit.

HOW TO TEACH THE "WATER" UNIT

HOW DOES THE TOPIC "WATER" RELATE TO THE SCIENCE PROGRAM?

The Elementary Science Program (1-3 and 4-6, 1986) contains several themes which include concepts related to water. The following chart shows how the topics outlined on the General Concepts/Unit Overview sheet (see Table of Contents for page number) and the lessons in this unit relate to the concepts suggested in the program guide.

PROGRAM GUIDE

1.1 Living and Non-living Objects

2a) Living: - need food and water	Lesson: We Use Water in Many Ways

1.3 Properties of Materials and Change

1. Objects can be distinguished by physical properties such as colour, size, mass and shape.	Lesson: Liquids Lesson: Forms of Water
3. Change occurs where the properties of objects (matter) are modified	Lesson: Forms of Water Lesson: Heating and Cooling Water
4. Changes in properties of objects can occur when water is added to some objects.	Lesson: Mixing Things With Water Lesson: Absorbency
5. Changes in the properties of objects can occur when the objects are heated or cooled.	Lesson: Heating and Cooling Water
6. Some changes occur in a regular pattern and can be ordered.	Lesson: Heating and Cooling Water Lesson: Absorbency
7. Some changes are more easily reversed than others.	Lesson: Heating and Cooling Water Lesson: Mixing Things With Water
8. Some changes occur slowly and others rapidly.	Lesson: Heating and Cooling Water Lesson: Mixing Things With Water

2.2 Properties of Matter

5. Liquids have distinct properties - take the shape of the container - can be poured - splash - form drops	Lesson: Liquids Lesson: Bottles of Water

3.2 Energy, Heat and Temperature	
4. Matter tends to expand when heat is added (warmed) and contract when heat is removed (cooled). b) Liquids expand or contract.	Lesson: Forms of Water Lesson: Heating and Cooling Water
3.3 Changes in Matter	
2. Matter occupies space	
5. Particles can distribute themselves throughout a liquid or a gas.	Lesson: Mixing Things With Water
6. Water can exist as particles in air.	Lesson: Heating and Cooling Water Lesson: Forms of Water
10. Mixtures of materials can be separated on the basis of unique properties:	
a) Solids: - some solid materials float in water	Lesson: Floating and Sinking
b) Solids - Liquid Solutions: - some solids dissolve readily in water to form a solution (soluble); others do not (insoluble-form a suspension). - Dissolving a solid in a liquid is a physical change. - Filtration can separate solids from mixtures but not from solutions.	Lesson: Mixing Things With Water
4.5 Water and Land	
1. Liquids have special and unique properties. (Review)	Lesson: Liquids
3. An object's shape helps it to float.	Lesson: Floating and Sinking
4. Air and water help things float.	Lesson: Floating and Sinking
6. Water is a precious natural resource.	Lesson: We Use Water in Many Ways
11. Water evaporates to form clouds, moves, and then falls to the earth again. This movement is called the water cycle.	Lesson: Heating and Cooling Water
12. Our earth has serious fresh water problems. Clean water is an essential resource for life.	Lesson: We Use Water in Many Ways

Using the topic "Water" as an organizing theme, this unit thus translates the concepts from the Science and program guide into a set of teaching lessons.

What part of my program is this unit?

One of the basic principles of the Language Development approach is that students must learn the language necessary to understand, talk and write about all subject areas in order to succeed in school. Most of the material in the "Water" unit is related primarily to Science; it is therefore part of your Science program. It also contains lessons which emphasize language and concepts from other subject areas. At the beginning of each lesson is a statement which indicates which subject area that lesson emphasizes. You can teach the Literature lessons during Language Arts periods, or during Science, whichever you prefer.

What are the goals of this unit?

The goals of this unit include:

- Developing students' language proficiency. The purpose is to increase their storehouse of language items and meanings (vocabulary) and to build their intuitive knowledge of structures (sentence patterns). The intent is not to have students study how the language works or to analyze it.

- Providing opportunities for students to use language in many different situations and for many different purposes.

- Developing students' listening, speaking, reading, writing, and thinking skills. The thinking skills developed include the scientific process skills described in the science program guide.

- Expanding students' knowledge of the science concepts related to the "Water" topic.

What grade level is this unit?

Schools thoughout the N.W.T. have different ways of organizing students into classes. There are classsrooms which consist of only one grade, while others combine two or even three grades. Small schools sometimes have to put primary and intermediate students together. Regardless of the grade level(s), students in each class will have a variety of levels of proficiency in English.

It is difficult to present a unit which teachers can use easily in all these different situations. The chart which outlines Science topics for grades one to three lists this unit under Grade Three. You will find, however, that the unit contains a variety of language activities in the lessons that are more suitable for younger/older students. This was done to accomodate the range of abilities which exist even in classes which are supposed to be one grade level and also for those teachers who have multi-grade classrooms and want to teach the same unit to the whole class.

Whatl else do I need to know before I teach this unit?

It is important to understand the Language Development Approach which forms the basis of this unit and the Language Development Framework which forms the structure of each lesson. Please read the explanation of them which follows this section. It introduces the parts of each lesson and explains their purpose. Once you have read the description several times and taught a few lessons you probably will not have to read it for every unit.

How long should I spend on this unit?

The length of time you spend on each lesson and on the unit as a whole will depend in part upon what your students already know about the concept/topic and how interested they are in it. As with any unit you teach, however, the success of this unit will depend largely upon your interest in and enthusiasm about the topic. If you make the lessons stimulating to students, they will want to spend more time studying the topic.

In general, it is more important to cover a few concepts well and ensure that students incorporate the language items for those concepts into their langage repertoires than to cover everything in the unit. If students begin to lose interest in the topic, wind up what you are doing and start a new unit.

Which lessons do I teach?

This unit includes a number of lessons. As the person who knows your students and their needs best, you must decide which lessons are appropriate for your students and which are not. You may decide not to teach certain lessons because:

- students already know the concept and the language covered,
- students are not interested in that aspect of the topic,
- the language is too difficult or is not appropriate, and
- the concepts are too difficult or are not appropriate.

The initial assessment activity will help you identify which concepts and vocabulary students already know and therefore which lessons you can skip and which are more appropriate for you to teach. You might also want to check the students' cumulative files and/or discuss with other teachers which topics students have already covered. It is important to keep a record of which lessons you teach so that other teachers will not repeat that material in future years.

In what order should I teach the lessons?

You can teach the lessons in the order in which they appear in the unit or you can teach them in any order you think is appropriate for your students. Generally, the Science lesson for a topic should precede (or be taught at the same time as) the Language Arts lesson for that topic. The Language Arts lesson uses poetry or literature to reinforce the concepts taught during Science.

How do I adjust these lessons to meet the particular needs of my students?

The lessons in this unit are SAMPLE lessons. They may be used in classrooms where English is the first language of students (and they are very proficient), where students speak a dialect of English, or where English is a second language for students who come to school proficient in an aboriginal language. Because of this diversity of linguistic situations it is difficult to design lessons which are equally appropriate in every classroom. These lessons provide an example of the kind of language and activities which are appropriate to teach the concepts related to the topic. You may be able to teach them exactly as they appear here. If you feel some aspect of a lesson is not appropriate for your students however, feel free to adapt it to meet their needs. You may wish to use some of the activity ideas to make up lessons of your own and use them instead of the ones included. Some of the most common ways in which you might need to adjust the lessons include changing the:

a) amount or type of vocabulary and/or sentence patterns in a lesson. During the initial assessment activity you may find that students have/don't have particular vocabulary items or sentence patterns. You may need to make the language in each lesson simpler or more difficult, depending upon your student's proficiency. You may want to introduce fewer or more vocabulary items or sentence patterns. Students who are more proficient need to concentrate on vocabulary; you may want to omit all sentence patterns for them.

b) number of listening and speaking activities. Students who speak little or no English or who are not familiar with a topic require extensive aural/oral practice. This is particularly true

of primary ESL students. You may want to delete reading and writing activities altogether for such students and substitute more listening and speaking activities. Students who are more proficient do not need as much listening and speaking practice; they can do more reading and writing activities.

c) kinds of activities suggested for listening, speaking, reading, and writing. Your students' ages, interests, abilities, needs, and language proficiency influence the kinds of activities you choose for them. Students with limited proficiency require more controlled Language Practice activities. Students who are more proficient can handle more open-ended activities. Your preferred teaching style and the materials and equipment available to you also affect your planning. You may want to change some of the activities to make them more suitable for your students. You may have to change others because you do not have the necessary resources.

d) sequence of activities suggested. Each lesson contains all three phases of the Language Development Framework: Concept Development/Language Exposure, Language Practice, and Application. It is important to include all three phases in your teaching. However, you may want to alter the sequence in which you do the activities within each phase. For example, in the Language Practice phase listening and speaking activities always precede reading and writing activities. Usually it is important to develop aural/oral skills before introducing/developing literacy skills. However, if you have older students who are more proficient in reading and writing you may have to combine those activities with listening and speaking to keep students interested and involved. This is not as likely for primary students; they require simple physical actions to help focus their attention and energy during listening and speaking activities.

e) content used to teach the concept in each lesson. These units have been developed for use throughout the N.W.T. in various cultural and linguistic situations. It is difficult, therefore, to be as culturally specific in the lessons as desirable. As you plan your lessons, you must be as sensitive as possible to the cultural values, experiences, and lifestyles of your students. Please make the lessons as relevant to your community and your students as possible. If you think anything might be offensive to parents or students in your community please omit it or substitute more appropriate content. If in doubt, ask! LEA members, classroom asistants, and parents can provide suitable alternatives. If you are teaching any of the lessons in an aboriginal language, you probably will need to change much of the specific content in those lessons.

f) language in which you teach the lesson. If you teach in a classroom in which an aboriginal language is the language of instruction and English is taught as a second language you will wnat to teach some of the lessons in each language. For students who are just learning to speak English, the language in some of the lessons is too difficult. Teach those lessons in the aboriginal language.

If you teach in a classroom in which English is the language of instruction, you will teach all of the lessons in English. In such situations, you might teach some lessons during your Science and Social Studies periods and others during your Language Arts periods. If your students are not very proficient in English you may want to omit some lessons altogether.

How do I group students?

These lessons have been designed so that you can teach one lesson to the whole class. You can do Concept Development activities with everyone in most instances. Then you can group students for Language Practice activities according to their needs and abilities. Students who require listening and speaking practice can work with the teacher, a classroom assistant, and a tape recorder, or a language master while other students do related reading and writing activities. In this way you can work with the whole class on the same lesson, but students can perform at their own individual skill levels.

Sometimes you may want to group students and teach each group a different lesson. You could organize these groups in two ways:

1) include students with different levels of proficiency in each group. The students who are more proficient serve as models for less proficient students. Teach each group a lesson from a different topic and have students share their work with each other.

2) include students with similar proficiency levels in each group. Teach each group a lesson using material at its proficiency level.

What kind of preparation do I need to do before teaching a lesson?

First of all, you should read over the lesson so that you are familiar with it and with the materials you require to teach the lesson.

Secondly, you should make sure you have all your materials ready, even if it means delaying the introduction of a unit or lesson for several days. This includes whatever resources you require for the Concept Development activities, as well as Language Practice materials: vocabulary cards, pictures, sentence strips, etc.

Initially it may seem as if there is a lot of preparation for each lesson, but one lesson may take several days to teach and most lessons use the same materials over and over again in different ways. Students in small groups use many of the materials from Concept Development activities during Language Practice. If you work in a school where more than one teacher is using the units, perhaps you can share the preparation work required. Older students often enjoy making things like sentence strips after school as well. Once you have made the materials for one lesson, be sure to save them for another teacher or another year! Plastic envelopes have been provided to help you keep all the materials for one unit together.

How do I schedule a lesson on my timetable?

Because the lessons emphasize language related to different subject areas, you may want to teach them during various subject periods. This means you may be working on two or three lessons at the same time, each during a different subject. Since the lessons all focus on the same theme, language and concepts emphasized during one period will reinforce those learned during another. It also means that you would be combining the normal times allocated each week for Science and Social Studies to teach this Science unit for three weeks or a month. You would then switch to a Social Studies unit for several weeks using both time periods.

As you plan, keep in mind that one lesson is not necessarily equivalent to one day's work. You will require several days to cover most lessons. You need this amount of time to make certain students internalize new concepts and language items. The chart below shows how you might teach the lesson "Floating and Sinking" during your Science period over a week.

Note that the Concept Development activities are spread over several days. This helps reinforce both concepts and language and gives students who miss one day's lesson other opportunities to be exposed to the material. Note also that listening and speaking activities precede reading and writing so that students are very familiar with the langauge orally/aurally before they work with it in print.

Key

(L) = Listening activity
(S) = Sepaking activity
(R) = Reading activity
(W) = Writing Activity

	Monday	Tuesday	Wednesday	Thursday	Friday
Concept Development	#1a) b)	#1c) d)			
Language Practice	#1(L) #2a)(L/R)	#2b)(L/R) #3 (L/S)	#4(L/S) #5(S/R)	#6(R/W)	
Application	#2	#1	#3	#4 #5	#6 #7

How do I evaluate student progress in this unit?

Initial Assessment

The initial assessment activity (see page 34) which you do with the students before any of the lessons will help you determine which concepts and language students already know and which they need to learn.

Ongoing Assessment

It is important to continue assessing students' success in mastering language items, skills and concepts throughout the unit. Each phase of the framework provides opportunities for assessment. During the Concept Development/Language Exposure activities you can informally assess students' understanding of new concepts through observation. Watch to see which students have difficulty matching new language items with the appropriate objects or meanings. It is important to ensure that all students understand new vocabulary and sentence patterns before starting Language Practice activities.

The nature of the Language Practice activities allows you to assess individual student performance of listening, speaking, reading, and writing skills. You can decide which activity to do next based on student performance in the previous activity. Those students who have difficulty with aural/oral activities require extensive practice before doing reading and writing.

The Application activities have been designed to give you an opportunity to determine how much of the language for that lesson students have learned. You can also determine whether students understand the language and concepts.

In addition to observing students during lesson activities, sometime during the course of the unit each student should have a personal conference with you to review work from various lessons. The one-to-one nature of this meeting allows you to determine more effectively:

1. specific weaknesses and strengths in listening, speaking, reading, writing skills,
2. comprehension of and proficiency using new language items,
3. topics and areas within a topic of particular interest to the student.
4. individual progress with the development of scientific process skills (thinking skills),
5. comprehension of science concepts included in the unit.

For the student this meeting serves as an important opportunity to articulate thoughts and feelings about the topic, share work with an interested adult, and identify future projects and directions. You can use the conference to take an in-depth look at one piece of independent reading/writing, to teach skill lessons needed to support and encourage student efforts, and to determine appropriate activities for future lessons.

Final Assessment

The culminating activities provide further informal assessment opportunities. During these activities students use all the concepts, skills and language they have learned throughout the unit. In addition, you may want to use your own assessment techniques or instruments to determine what students have learned. There are examples of simple evaluation activities at the end of the unit.

What kind of records should I keep for this unit?

You will want to keep records for yourself of individual student's progress and mastery of skills, concepts and language. These records can be a combination of anecdotal notes based on observations, check lists, formal or informal tests, taped samples of students' speech and reading, and samples of written work.

Students should also be responsible for keeping records of what they have accomplished. They can keep lists (poems they have learned, stories they have read, books they have written), journals, and their own samples of speech, reading and writing.

Finally, it is also important to keep a list for the next teacher of which topics you have taught and which concepts have been covered in those topics. Hopefully this will prevent those groans of "We did that last year," or even worse "We've done that every year since grade one!"

You will find more detailed information on evaluation and record keeping forms in the booklet Evaluation Guidelines for the Language Development/Science Units.

INTRODUCTION TO THE LANGUAGE DEVELOPMENT APPROACH

This unit consists of lessons which illustrate how to implement the Language Development Approach in the classroom. In order to use these lessons most effectively, it is important to be familiar with and understand:

a) the principles which form the basis of the approach, and
b) the methodological framework which provides the structure for the lessons and applies the principles to teaching practice.

The following is a brief explanation of the principles and the framework. For a more in-depth discussion of both, refer to the appropriate sections in the Language Development ESL/ESD guide.

PRINCIPLES?

The Language Development Approach draws on elements of many approaches to teaching second languages and English language arts and integrates these to form a broad set of principles regarding language teaching. These principles include:

1. Students need to have their experiences, skills, knowledge, and particularly, the language they bring to school identified and used as the basis for the school language program. The program should begin with and build on these strengths. Where children are dominant in a language other than English, they should be taught in that language. In many communities in the N.W.T., that means that the language of instruction should be Inuktitut or one of the Dene languages. Such students should gradually learn English as a second language. In instances where students speak a dialect of English upon school entry, the school's role is to respect and make use of the language the students bring, and help them learn the English used in other communication situations and which is necessary for success with the curriculum. The aim of language instruction, where applicable, and where possible, is to create bilingual students.

2. Students need to learn to articulate for themselves and to communicate their thoughts, feelings, needs, opinions, and intentions for a variety of purposes in many different communication contexts. They need to be able to understand, learn from and respond to the communication of others. This involves being able to:

   a) express and inquire about personal needs, desires, feelings;
   b) socialize;
   c) direct;
   *d) express and find out intellectual attitudes;
   *e) impart and seek factual information on past and present experiences;
   *f) reason logically;
   *g) predict;
   *h) project;
   *i) imagine.

   *Success in school depends largely upon the students' abilities to use language in these ways.

3. ESL/ESD students need to spend more time learning to speak English than they do learning about English. Until students have an extensive language repertoire, and can use language for a variety of purposes and in many different situations, they are not ready to analyze language. When students have developed an intuitive grasp of how English works, they can begin to study language concepts and how to apply them.

4. Students need to learn language, but they also use language to learn. Therefore, language should be taught across the curriculum. Whether students are learning a subject in their first language or in a second language, the development of each student's language skills is essential to achievement in the subject.

5. Students need to learn language that is meaningful. It is easier to accomplish this when teaching language in a context. Therefore, all teachers, in all subject areas, must attend to concept development. Without adequate concept development, the language students learn is either vague or devoid of meaning.

6. Students need to learn to develop their thinking skills and to engage in more abstract levels of thought as they mature. They must learn the language that allows them to express their thinking about concepts. Initially, they need to learn concrete vocabulary and functional sentence patterns as they learn to recall, match, sequence, classify, etc., during activities. Eventually they need to learn more abstract terms and more complex sentence patterns as they grow in their ability to think more abstractly: generalizing, analyzing, imagining, predicting, and evaluating.

7. Students need to participate in language activities that integrate the language strands of listening, speaking, reading, and writing. When these strands are taught in isolation from each other in the guise of subjects such as spelling, phonics, grammar, reading, etc., student learning becomes fragmented. Students have difficulty understanding the relationships among listening, speaking, reading, and writing and lose the benefit of one or more strands preparing for and/or reinforcing growth in another e.g., discussion and brainstorming which involve listening and speaking prepare students for writing. First and second language programs should therefore integrate listening, speaking, reading, and writing skills. Specific skills taught will vary with the proficiency level of the students. In the initial stages reading and writing activities should use only language which students have internalized already through aural/oral work. Strong oral proficiency is a prerequisite to learning to read.

a) Successful readers rely on three language cue systems:

- grapho-phonemic
- semantic-associational
- syntactic

The ability to use the latter two systems is a function of oral language proficiency. The greater the oral proficiency or degree of internalized language of the students in either their first or second language, the more able they are to use the latter two systems. Reading instruction should not emphasize the use of the grapho-phonemic system to the exclusion of the semantic associational and syntactic systems.

b) Successful writers also rely on three cue systems. They must possess a meaning base on which to draw, a storehouse of vocabulary representing the meaning base (semantic-associational), and an intuitive sense of how the English linguistic system works (syntactic). Mechanical skills (grapho-phonemic) are just the tools which enable students to communicate knowledge more effectively.

8. Students need to learn "real" language and how to use it in the natural situations in which it is required. The vocabulary items and sentence patterns used in lessons should be as similar as possible to the everyday language people actually use. Students require opportunities to practice the language by interacting with others. They will not learn to use language effectively solely through individual paper and pencil exercises.

Program content, classroom organization and teaching techniques used to develop concepts and language and skills should:

a) reflect all of the above, and
b) vary according to:

- the language proficiency of the students in the first and second language,
- cultural background (experiences, interests, and cognitive abilities),
- age/grade levels,
- type of topic,
- learning style of students,
- materials and equipment available,
- teaching style of teacher.

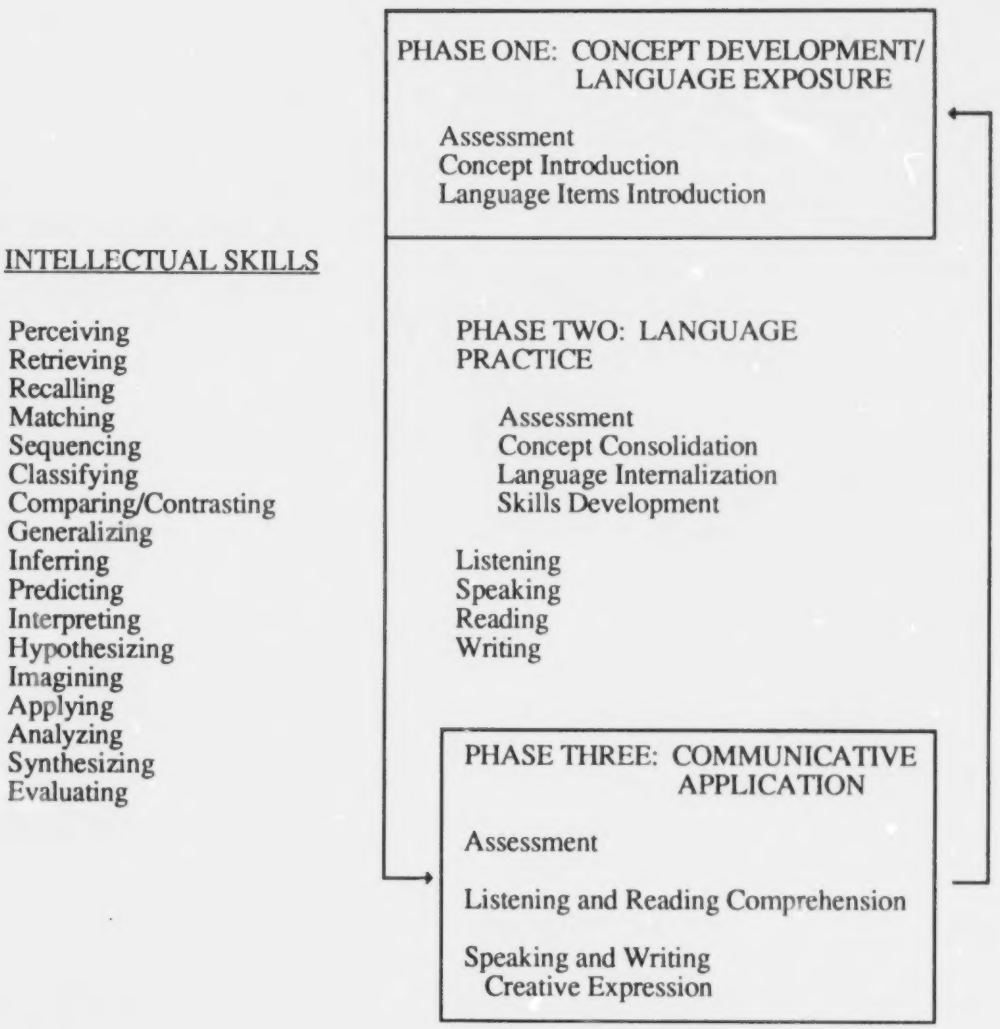
FRAMEWORK

The Language Development Approach uses the following framework to structure lessons involving language learning and conceptual development for all subject areas or for any topics of personal or cultural relevance and interest. The framework consists of three phases:

Phase One: Concept Development/Language Exposure
Phase Two: Language Practice
Phase Three: Communicative Application

LANGUAGE DEVELOPMENT FRAMEWORK

(Based on the work of Jim MacDiarmid
Adapted by B. Pugh and C. McGregor)



Phase One: Concept Development/Language Exposure

At the beginning of this phase, it is important to assess what conceptual and linguistic knowledge students already possess for a topic. This assessment establishes the appropriate starting point for instruction and helps determine which concepts, experiences, and language items to emphasize.

During this phase, students participate in meaningful activities or experiences through which they learn new concepts related to the topic of study. As much as possible, these activities should involve direct, firsthand, active learning with concrete materials. Where necessary, e.g., in a unit on space, indirect or analogous experiences (films, filmstrips) allow students to move beyond the confines of the immediate classroom to explore concepts associated with other times and places. These activities and experiences help students build bridges between what they already know and new concepts.

While they carry out the concept development activities, students hear and use the new language items that express the concepts. They learn to associate new vocabulary with the relevant objects or actions and to express the relationships among concepts with appropriate sentence patterns. It is essential that students learn the meaning of all new language items during this part of the lesson.

You may choose to use the students' first language during this phase when students have little or no English. You can conduct the assessment tasks in their first language to determine the extent of their conceptual knowledge. If the concepts are familiar, concentrate in ESL classes on teaching the related English language items. If the concepts are new, teach them to students in their first language and then introduce English language items. In classrooms where English is the language of instruction, have the Classroom Assistant explain difficult concepts in the students' first language to be sure they understand them.

Phase Two: Language Practice

In Phase Two, students use the new language items introduced in Phase One in a variety of activities that develop listening, speaking, reading, and writing skills. Through intensive practice of items in a variety of ways, students come to "own" the new language, i.e., commit it to memory so that it becomes part of their permanent storehouse of language items. These activities also continue to strengthen the bond developed in Phase One between the new concepts and the language items that represent those concepts. While the whole class may participate in most of the

Phase One activities, it is important to group students for language practice according to their language skills and needs. For students who are not proficient in English, use only language items that they are comfortable with aurally/orally in reading and writing activities.

Phase Three: Communicative Application

The final phase of the lesson sequence provides opportunities for students to use their acquired knowledge and language to communicate in a variety of situations. Students show they have understood the new concepts and can use the new language items as they interact with others. These activities involve students in listening, speaking, reading, and writing to solve problems, bridge an information gap, share information, complete a task, develop an arts and crafts project, share a finished product and explore related concepts and language. While carrying out these activities, the teacher can work individually with students to assess the extent to which they have mastered the concepts and language from the lesson.

In addition to the communicative application activities for each lesson, there are culminating activities at the end of each unit which provide opportunities for students to use all the concepts and language they have learned throughout the unit. During these activities the teacher can meet with students to review their work and what they have learned during the unit.

Intellectual Skills

An essential component of the framework is the development of intellectual skills. Learning new concepts and language involves thinking skills. On the other hand, the ability to think abstractly involves conceptual and linguistic knowledge.

Students who lack the prerequisite basic experiential and linguistic knowledge for a topic cannot engage in activities that require them to apply or solve problems using that knowledge. In moving towards abstract levels of thinking students must:

- acquire simple and concrete concepts and the corresponding labels,

- see patterns and relationships among concepts and form progressively larger and more inclusive conceptual networks in the form of principles and generalization,

- apply the principles and generalizations to new situations, and

- analyze, synthesize, and evaluate old and new knowledge to solve problems.

In the Concept Development/Language Exposure phase, assessment activities establish whether or not students have basic building block concepts and language to engage in more abstract thinking about a topic. Subsequent activities fill gaps and/or extend the students' background. The structured nature of the Language Practice activities demands less high level intellectual activity. Answers are more convergent in nature; the information readily provided or available. However, Communicative Application activities require divergent thinking. Students draw on what they already have learned during the previous two phases to bridge an information gap or solve a problem.

USING THE FRAMEWORK

The Language Development Framework:

- helps students acquire a conceptual background about a topic;

- helps students acquire language to express their knowledge about that topic;

- provides opportunities for students to use their knowledge and related language in a variety of situations; and,

- provides opportunities for students to engage in higher levels of thinking.

The framework forms the basis for the following lessons. Keep in mind that the techniques and activities you use with students depend upon many factors:

- cultural background of students
- learning style of students
- age level of students
- proficiency in English
- type of topic
- materials and equipment available, and
- preferred teaching style of teacher.

RESOURCES: BACKGROUND INFORMATION ON WATER

Pure water is composed of the elements hydrogen and oxygen (two parts hydrogen for every part of oxygen). When these two invisible gases combine to form a liquid (water) or solid (ice), we can see them. When they remain in a gaseous form, such as steam or vapour, they are not always visible. The earth's surface is about 75 percent water and 25 percent land. The human body is about 70 percent water. Many compounds contain water. Foods hold a lot of water.

Clouds are water vapour that contain billions of tiny droplets of water. Rain occurs when these droplets combine and get too heavy to float, so they fall to earth. Water keeps travelling from sky to earth to ocean, and back again to sky. This constant movement is called the "water cycle".

Water becomes a solid when it is frozen into ice at 0 degrees Centigrade (32 Degrees Fahrenheit). It becomes a gas when it boiled into steam at 100 degrees Centigrade (212 degrees Fahrenheit). When water freezes it expands.

Note to Teachers:

This unit capitalizes on the intrinsic appeal which water has for children. Although the "WATER" unit does involve the development of many scientific concepts and the language with which to discuss these concept, the key words which set the tone for the unit are "discovery learning" and "imaginative play". Children will get great personal satisfaction from their "play" with water and will be inadvertantly observing, comparing, classifying, quantifying, measuring, experimenting, inferring, predicting, communication, interpreting data, hypothesizing, etc.

RESOURCES: RELATED ENGLISH MATERIALS

Magazines:

Refer to back issues of magazines such as Owl, Chickadee, National Geographic World, Ranger Rick, etc.

Children's Book

Water
Rae Bains
Troll Associates, 1985

Clean Brook
Margaret F. Bartlett
Harper & Row, 1960

Floating and Sinking
Franklyn M. Branley
Harper & Row, 1967

Wonders of Water
Jane Dickinson
Troll Associates, 1983

Junior Science Book of Water Experiments
Rocco V. Feravolo
Garrard Pub. Co., 1965

Water for Dinosaurs & You
Roma Gans
Harper & Row, 1972

Splash & Trickle
Ivah Green
Rainbow Books, 1978

Why is Water Wet?
M. Konstantinovsky
Imported Publications, 1979

Water
Alfred Leutscher
Dial Books for Young Readers, 1983

Thank You for a Drink of Water
Patricia Smeltzer & Victor Smeltzer
Winston Press, Inc., 1983

Water
Adrienne Soutter-Perrot
Barron's Educational Series, Inc., n.d.

Willy, A Story of Water
J. Spar
Oddo Publishing, Inc., 1968

Pollution
Herta S. Breiter
Raintree Publishers, 1978

Once There Was a Stream
Joel Rothman
Scroll Press, 1973

The Troll Who Lives in the Lake
Don a Torgersen
Childrens Press, 1978

Icebergs & Glaciers
Patricia Lauber
Garrard Publishers, Inc., 1961

The Bottom of the Sea
Augusta Golden
Thomas Y. Crowell, 1966

Bubble, Bubble
Mercer Mayer
Parents' Magazine Press, 1973

The Storm Book
Charlotte Zolotow
Harper & Row, 1952

"Bubbles and Bubbles
From The Mount Gravatt Developmental Language Reading Program - Level 2
Addison-Wesley Publishers

From Ice to Rain
Marlene Reidel
Carolrhoda Books, 1981

Drip - The Story of a Water Drop
Julie Gosling
Pitman Publishing, 1971

Macdonald First Library - Lakes and Dams
Macdonald Educational, 1973

Starters Science - Wet and Dry
Drips and Drops
Floating and Sinking
Science Readers - Water Surfaces
David Roberts
Whitcombe and Tombs Ltd., 1972

Social Studies Readers - A Rainy Day
Jan Spray
Whitcombe and Tombs Ltd., 1971

Science is Fun - Floating and Sinking
Ed Catherall
Wayland Publishers Ltd., 1985

"Rain"
"Lazy Jane"
From Where the Sidewalk Ends
Shel Silverstein
Haper & Row, 1974

Let's Find Out About Water
Martha Sharp
Franklin Watts, n.d.

Wet & Dry
Seymour Simon
McGraw-Hill, n.c.

Water is Wet
Sally Cartwright
Coward, McCann and Geoghegan, 1973

Splash and Flow
Ruth R. Howell
Atheneum, 1973

Films, Filmstrips and Slides

Solids, Liquids and Gases (filmstrips/cassette)
National Geographic Society, 1983

My World ..... Water (Film)
Churchill Films

Stepping into Science: Things To Do with Water (Filmstrips/casssette)
Educational Enrichment Materials

Teacher's Resources

Science Experiments with Water
Sam Rosenfield
E.M. Hale, 1966

Things To Do with Water
Illa Podendorf
Children's Press, 1971

Do You Know About Water?
Mae Blocker Freeman
Random House, 1970

Easy Experiments with Water Pollution
Harry Sootin
Scholastic Book Services, 1974

Science Experiences for Young Children: Water
Rosemary Althouse and Cecil Main
Teachers College Press, 1975

Bubbles - A Children's Museum Activity Book
Bernie Zubrowski
Little, Brown and Company, 1979

Science From Water Play
John Bird
Macdonald Educational Ltd., 1976

Examining Your Environment
Running Water
Snow & Ice
Stecher, Wentworth, Couchman, and MacBean
Holt, Rinehart and Winston of Canada, Ltd., 1971

Investigations in Science - Water World
Bessie J. VandenHazel
John Wiley & Sons, 1977

Water, Experiments to Understand It
Borris Arnov
-Lothrop, Lee & Shepard, n.d.

Bathtub Physics
Hy Ruchlis
Harcourt Brace Jovanovich, n.d.

Water
Life Science Library
Time-Life, 1966

Science From Water Play (Teaching Primary Science)
Macdonald Educational

Waterworks
Jeanne C. Jones
Randy F. Granovetter

Available from: Exclusive Educational
91 Patterson Products Road
Barrie, Ontario
L4N 3V9

Miscellaneous

Water Task Cards
Department of Education, GNWT, 1974

A River Under Siege (Poster - class size/student size)
Environment Canada, 1986

Inland Waters Directorate
Western and Northern Region
1901 Victoria Ave.
Regina, Saskatchewan S4P 3R4

Northern Deltas - Oases for Wildlife (Information brochures)
Environment Canada, 1985
Canadian Wildlife Service

What Do You Know About Water? (Pamphlet series)
Environment Canada, 1976
Inland Waters Directorate

"Water Dance"
From Baby Beluga (Record/cassette)
Raffi
Troubadour Records

Basic Science: Water (Set of 8 colour prints)
Society of Visual Education

INITIAL ASSESSMENT ACTIVITY

The following activities should be done before you teach any of the lessons. They will assist you to determine:

- what students already know about the concepts of the topic and therefore where instruction should begin;
- what interests students have in the topic and therefore the direction the unit should take; and,
- what language students already have to discuss the topic and what language they require.

One of the basic principles of the Language Development Approach and of all good teaching is that you should start with the student when planning and carrying out a unit. Before you being to teach it, it is important to assess your students' knowledge of and interest in the topic. You should determine what students already know about the topic/concepts you intend to cover. What ideas do students already have? What misconceptions do they have which you must address? What gaps are there in their knowledge which require that you teach certain lessons? What concepts do they know well enough so that you can skip the lessons which teach those concepts? What questions do they have? What relationships do they see between different aspects of the topic?

It is also important to identify what experiences students have which relate to the topic/concepts. By identifying these and building upon them in the lessons you can help students relate the new ideas and information to their own lives. It is important to do this because it assists students to internalize new concepts. It helps students make the concepts part of the conceptual framework which they use to understand and describe their world. If they do not have concrete, firsthand experiences to relate to each concept you will have to provide them wherever possible.

Another use for these activities is to help you identify particular interests of individuals, groups of students, or the whole class. You can then include activities in the lessons which involve student interests, thereby increasing motivation for them to participate and learn. You may decide to add, substitute or omit some lessons because of students' interests.

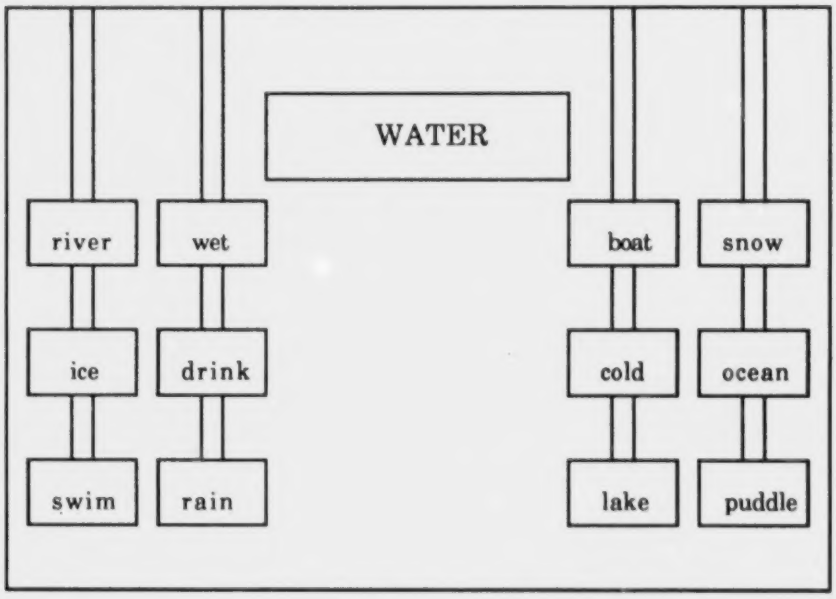
These activities will also help you determine what language students have to discuss the topic. You can find out what vocabulary items students already know and what associations they have for each word. It is important to ascertain the meanings students attach to words; sometimes their interpretations may surprise you! If they do not clearly understand terms or use them incorrectly,

it will prevent them from understanding and incorporating the concept into their mental framework.

1. Brainstorming:

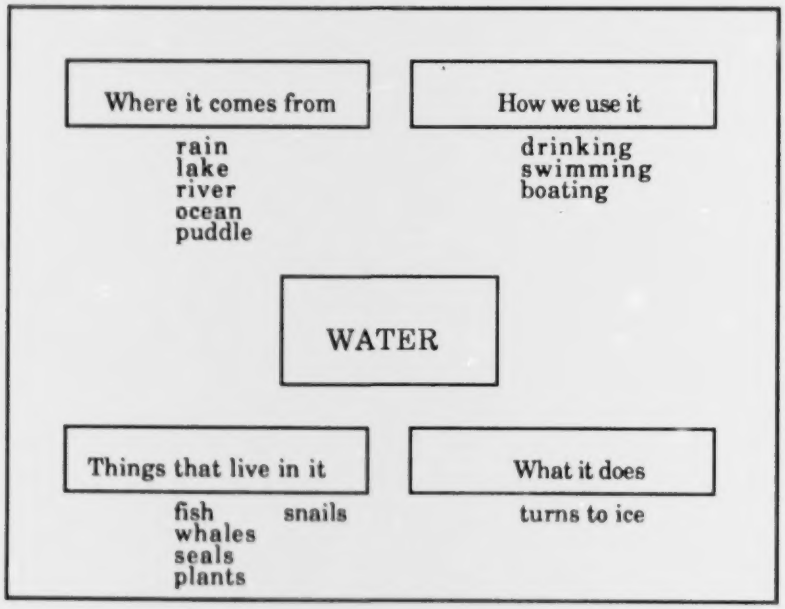
Set up a water table in the classroom. (If you don't have a water table, a deep metal or plastic washtub will do). Provide students with a selection of containers and a variety of objects, some which float and some which sink. Allow plenty of time for students to "play" with the water.

Ask students to tell you what words they think of when they hear the word "water". Record their responses on cards and hang them on masking tape strips (sticky surface up) which you fasten to the wall or the chalkboard.



After you record their responses on cards have students chant the words with you. Talk about the words: Which word is the most interesting? the least interesting? the most puzzling? What other word can you think of that means almost the same thing? What comes to your mind when I say _____? What do you think this word means? Etc.

2. Transfer the words to a flowchart to provide a permanent reference. As you teach the unit you may wish to add new information to the chart. You may also identify new questions and, hopefully, the answers. At the end of the unit you can review the chart with students. Keep it as a reference for future use.



SAMPLE QUESTIONS

You can use these questions during the Initial Assessment activity to determine what experiences, languages, and knowledge students have about the topic. You can also use the questions for assessing thinking processes throughout the Concept Development and Application phases of each lesson and during the Culminating and Evaluation activities.

Questions for Assessing Experience:

1. Have you been in a situation where _____?
2. What do you know about _____?
3. Have you ever seen _____?
4. Have you ever experienced _____?
5. Have you ever been _____?
6. Have you ever done _____?
7. Has something like this ever happened to you?
8. When was the last time you _____?

Questions for Assessing Language:

1. What do you think these words mean?
2. Can you give me another word that means _____?
3. What comes to your mind when I say _____?
4. Have you heard of the word(s) _____?
5. What words can you think of when I say the word _____?

Questions for Assessing Thinking Processes:

Cognitive Memory (details, information)

1. Who .....?
2. What are the facts?
3. What are the most important details?
4. What is the .....?
5. What do you mean by .....?
6. What is your interpretation of what happened? (What do you think happened?)
7. When?
8. Where?

Convergent /Generalizing (getting the main idea)

1. What are the chief points?
2. Given that information, what is the main idea?
3. What is the single, most important idea?
4. State the idea in one sentence.
5. Explain _____?

Structuring/Relating (arranging relationships)

1.	Categories:	Which group does that belong to?
		How would you classify .....?
		What type would you .....?
2.	Comparisons:	How are they alike? same? similar? identical?
3.	Contrast:	How is it different? in opposition to? unlike?
4.	Cause and Effect:	What will happen if? Why? What will happen as a result of?

Divergent/Using/Applying

1. What might happen if?
2. If you use that idea, what would it mean for _____?
3. Apply that idea to our (this) situation.
4. What would result if _____?
5. If you were given these facts, what would you do to _____?
6. How would it be different if we used this idea?
7. What could the advantages/benefits be if we applied this idea/process?
8. What do you think the (story/paragraph) will be about?

Evaluation/Judging/Valuing

1. How do you feel about this idea?
2. What is your opinion?
3. What is the best _____?
4. Are you satisfied with that answer/plan?
5. Can this statement be made? Why?
6. Out of all the information, what can be used to prove your point?
7. How would you judge?
8. What is you opinion or conclusion about the product/plan/idea?
9. Why did you think it worked/didn't work?
10. What is fact? What is opinion?

ACTIVITY IDEAS

TOPIC A: PROPERTIES OF WATER AS A LIQUID

SCIENCE /SOCIAL STUDIES

1. Fill a glass to the rim with coloured water. Can anything else be added to the glass? Slowly add drops of water from an eye dropper or gently drop in coins (hold the coins on the edge and slip them into the water). Who can get the most drops of water or coins into the "full" glass of water?
2. Try to lift someone before you both get into a lake or pool. Try to lift the person again when s/he is partly submerged. Try again when s/he is completed submerged. Which way is easiest? Why? (Water has an upward force, buoyancy, which works against an object's weight and makes the object seem lighter.)
3. Take two balls of the same size and tape coins onto one ball to make it heavier. Which ball sinks the most? If an object floats, it weighs less than an equal volume of water. If an object sinks, it weighs more than an equal volume of water (the force of gravity is greater than the force due to buoyancy). How many coins can you tape to a ball before it sinks completely?
4. Find two balls of different sizes but equal masses. (Use coins to increase the mass of one ball if necessary). Does the size have an effect on how much of the ball floats above water? (The greater the volume, the greater the displacement of water, and therefore the greater the buoyancy).

MATHEMATICS

1. Put two drops of water on a piece of glass. Tilt the glass and have a waterdrop race. Time each drop. Graph results. (Use different liquids, different sizes of drops, different surfaces. Compare the results).
2. Put a piece of cloth over a jar. Put 2 tbsp. of water on the cloth. How long does it take for the liquid to drip through? Record the time for different liquids and different types of cloth. Graph results.
3. Measure and pour (before class) 1 cup of water into each of three transparent containers: one tall and thin; one short and wide; and one flat and very wide. Ask students which has the most water and which the least. Have them measure the amount in each container. Discuss.

Science/Social Studies Continued...

5. Look at photographs of water scenes. List all the things that are floating. (Use a frame sentence such as: _____ is floating).
6. Place a celery stalk in a bowl of coloured water. Watch the water rise in the celery (capillary action).
7. Sprinkle a few drops of water on wax paper. Does the water spread out or form droplets? Use a toothpick to break a drop into smaller and smaller drops. What shape are the smaller drops?
8. Get a drop of water on your thumbs. Touch it gently with your index finger. Lift your finger slowly. What happens?
9. Put a small rock into a clear plastic container that is partially filled with water. Watch how the water level rises as the rock is placed underwater. Mark the level. Does it change if a larger rock is put in the container instead of the first rock? (Two things cannot occupy the same space at the same time. When you put an object into water, the object moves aside a volume of water equal to its own volume.)
10. Find some hollow shapes. Do they float? Fill them with water. Do they still float?
11. Put a jug and various sizes of containers at the water table. Have students fill containers with the jug. Which containers holds the most water? The least water?
12. Make juice from powder. Discuss dissolving. Try making "rice juice". Taste the water to see if it has changed.

LANGUAGE ARTS

1. Tell the story of "The Cow and the Pitcher" (Aesop's Fable). Have students dramatize the story using real props. Discuss what might have happened if the crow put corks into the pitcher instead of stones.
2. Make lists of words that rhyme with "float" and "sink".
3. Write poems or stories about a boat that wouldn't float. Brainstorm ideas with the whole class.
4. Take photos of the steps involved in making juice from powder. Have students arrange the pictures in sequence, and make a chart explaining the procedure.

PHYSICAL EDUCATION/MOVEMENT

1. Push a large ball (e.g., beachball) underwater as far down as possible. Can you feel a force pushing upward? Have a contest to see who can make a ball pop the highest. Try different types (sizes) of balls, different masses, and various degrees of submersion. Do round objects like balls go higher than other shapes, such as long sticks?
2. Have a stone skipping contest. Give prizes for the most skips, the longest skips, etc.

MUSIC, POEMS, STORIES

1. Stand eight empty pop bottles in a line. Fill the first bottle almost completely with water. Tap it with a spoon. Fill the next bottle slightly less, until the next note of the musical scale is obtained. Continue lowering the level of the water in successive bottles until the entire musical scale is reproduced. Each bottle should have a note higher than itself on one side, and a lower note on the other side. Try to play familiar tunes on your pop bottle instrument.

3. Learn the song and actions for "I'm a Little Teapot".

ART

1. Put a big blob of paint and paste mixture on paper. Fold paper and press. When you open it there will be a design. Try with two different colours of paints.

2. Wet a piece of construction paper. Drip different colours of paint from a paintbrush onto it.

3. Drip paint onto paper. Blow it around with a straw to make a design.

SPECIAL ACTIVITIES

1. Raft-building Contest: Provide each student with several sheets of paper or aluminum foil. They may not cut the sheets to make them smaller. The rafts are made by bending up the sides of the paper of foil, folding around the corners, and securing the corners with tape. Test the rafts one at a time in a basin of water. Slowly add pennies until a raft begins to sink. Record the number of pennies that each raft held. The raft holding the greatest number wins. Discuss the designs of the rafts: Which were best - the broad, shallow rafts? the narrow, deep rafts? something in between?

2. Find out how submarines can go up and down in the water.

3. Find out why very huge steel ships can float. Why do they sometimes sink? Read and discuss accounts of the sinking of the Titanic.

4. Make a floating centrepiece in a large glass bowl. Float flowers, pinecones, etc.

5. Put a drop of water on a piece of clear plastic. Hold it over a letter on a book. What happens?

Art Continued....

4. Make walnut shell boats.
5. Tie-dye T-shirts, cloth for curtains or room dividers, etc.
6. Seach for water pictures in magazines. Use them to make a collage.

SPECIAL ACTIVITIES Continued...

6. Cut the bottom out of a plastic ice cream bucket. Cover the hole with plastic wrap. Hold it in place with a rubber band. Use the bucket to view things in a pond or river.
7. Make juice popsicles.

LESSON: LIQUIDS

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concepts:

1. Liquids have distinct properties:
   - take the shape of their containers
   - can be poured and stirred
   - splash and drip
   - form drops
   - usually feel wet

2. Solids have distinct properties: (Review - See POPCORN Unit)
   - retain their shape
   - can be poured only if in small pieces

3. Gases have distinct properties:
   - take up space
   - can move and cause objects to move

English Vocabulary: (*actually developed in this lesson)

* liquid
* solid
* gas
* names of familiar liquids
* names of familiar solids

English Sentence Patterns (*actually developed in this lesson)

* Is _____ a liquid, a solid or a gas?
* _____ is a solid/liquid/gas.

Special Materials Required:

Variety of familiar liquids (water, oil, vinegar, syrup, juice, etc.)
Variety of familiar solids (stones, sand, sugar, marbles, pencils, etc.)

Pictures of familiar solids and liquids

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. a) Put a stone into a plastic bag. Tell students, "The stone is a solid." Drop the stone. Ask, "Does this solid change its shape easily?" Poke the stone with a pencil. Ask, "Can I move a pencil through it easily?" Try to pour the stone into a bowl. Ask, "Does the stone pour easily?" Summarize and record the properties of the solid on a chart.

   Fill a plastic bag with water. Ask, "Is water a solid? What is it?" (Hopefully someone will provide the word liquid; if not, introduce it). Move the water around in the bag. Ask, "Does this liquid change shape easily?" Pour the water into a glass and stir it with a pencil. Ask, "Can I move a pencil easily through this liquid?" Pour the water into a glass. Ask, "Does the water pour easily?"

   Fill a plastic bag with air. Ask, "Is air a solid? What is it?" Introduce the word "gas" if students do not provide it. Squeeze the bag. Ask, "Does this gas change shape easily?" Open the bag and stir the air with a pencil. Ask, "Can I move a pencil easily through this gas?"

   b) Review the ways in which the stone, the water and the gas are different:

Solid	Liquid	Gas
Doesn't change shape easily	Changes shape easily	Changes shape easily
Pencil doesn't move through it easily	Pencil moves through it easily	Pencil moves through it easily
Doesn't pour	Pours easily	

   c) Give each student three plastic bags and three twist ties. Tell them to find one solid, one liquid and one gas and to place one in each bag. Model the sentence patterns as students share their findings.

2. Divide a table into three sections with masking tape. Label the sections: **solid, liquid** and **gas**. Provide a big box of objects that include solids, liquids and gases. Have each student select an object from the box and place it in the appropriate section. (If students have difficulty locating gases, remind them that "empty" containers are full of air which is a gas). Model the sentence pattern as you examine the objects in each section.

3. Pour oil into bottles of different shapes. Tilt a jar of oil to observe the shape the liquid takes. Repeat with other liquids: paint, juice, syrup, vinegar, etc. Put some stones into a similar container. Compare the effect of the containers upon the materials they hold.

4. Show students three glasses partially full of various solids (thumbstacks, staples, straight pins, etc.) and three glasses full of various liquids (paint, milk, water, etc.). Have students decide whether each glass contains a solid or a liquid. Ask them to explain their decisions.

5. Ask students to determine whether sand, salt and sugar are solids or liquids. If they cannot decide, have them examine the surfaces of liquids that have been poured into containers (they are flat and level). Compare the surfaces of sand, salt and sugar that have been poured into containers.

Language Practice:

L 1. True/False: Displace a variety of solids and liquids on a table. Select one and ask a question of your C.A. or a puppet. Students indicate by a physical response if the statement is true or false. For example:

Teacher: "Is juice a solid, a liquid or a gas?"
C.A.: "Juice is a liquid." (Students clap).

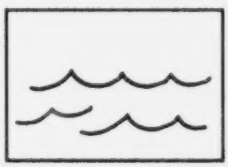
Teacher: "Is juice a solid, a liquid or a gas?"
C.A.: "Juice is a solid." (Students shake heads.)

L 2. Musical Chairs: Set chairs (one less than there are students) back to back in a row. Students walk around the chairs as you make statements about the topic. Students sit on a chair when they hear a false statement. Remove one chair after each round.

L 3. Elimination: State a category and a list of items that are examples and non-examples of that category. Students indicate which items do not belong. For example:

Solids: rock, boat, oil, ball, sand, cup, juice
(Students raise their hands when they hear "oil" and "juice".)

L/S 4. Substitution Drill: Distribute pictures of liquids to students. Hold up your picture and make a statement:



"Water is a liquid".

First student holds up his/her picture and substitutes its name in the statements:

"Milk is a liquid"

To keep students interested, you may wish to slip in a few pictures of solids. Students will have to pay attention to make sure that all statements are true.

L/S 5. Contradictions: Teacher makes a statement. Students respond by making a contradictory statement, for example:

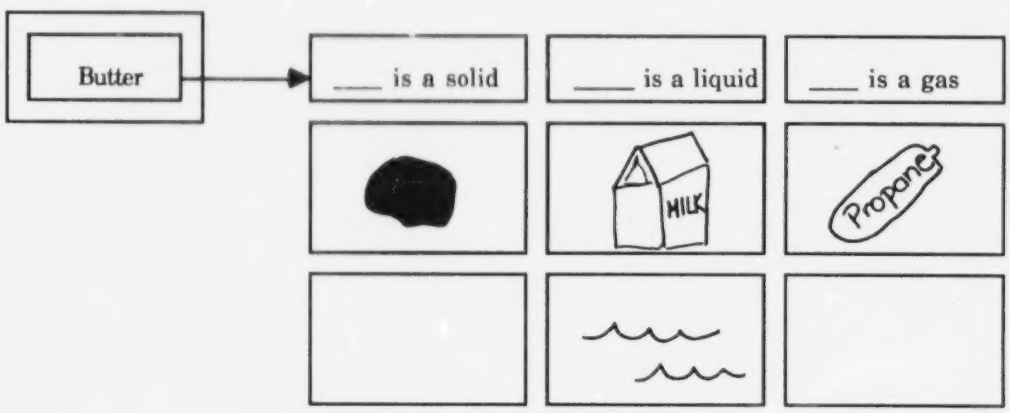
Teacher: "Milk is a gas".
Students: "No. Milk is a liquid".

L/S 6. Double Circles: Divide class into two groups by numbering off - "One-two-one-two-etc." Distribute picture cards to "ones" and have them stand in a circle facing out. The "twos" form a circle around the "ones", with each "two" facing a "one". "Ones" ask questions about their pictures of the "twos" facing them. After "twos" have answered, they move one step to the right so they are facing a new partner. Continue in this manner until students are a back to their original partners; then "twos" will ask questions of the "ones".

_____ is a solid.	_____ is a liquid.	_____ is a gas.

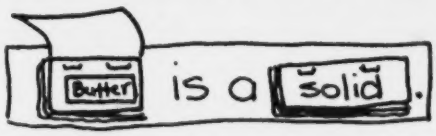
S/R 7. Sentence Strips: Distribute pictures to students. Place the following sentence strips in the pocket chart:

Read the first strip with students, "_____ is a solid." Ask students who have pictures that go with this strip to come forward. Ask each student, in turn, a question about his/her picture, for example, "Is butter a solid, a liquid or a gas?" The student responds using the sentence pattern. Place the picture in the strip and read it with the student as you point to the words.



Chant the statements with students.

R/W 7. Flip Books: Make flip books as shown below. Some students may wish to write the names of items below the pictures; others may choose not to use pictures at all.



Application:

1. Have students experiment with pouring water from a wide variety of containers. Try to elicit vocabulary items describing these activities.

   Encourage students to repeat the experiments with beads, sand, rice, blocks, sugar cubes, etc. As they do so, encourage them to compare pouring liquids with pouring solids. Discuss similarities and differences in the way the substances pour.

2. Have students list all the solids, liquids and gases that might be found in their houses. (You will probably have to help them with the list of gases).

3. Partly fill five jars with various liquids (e.g., water, cooking oil, vinegar, syrup, motor oil). Have students experiment with pouring them and order them from very runny to very thick.

4. Using an eyedropper, place single drops of various liquids onto pieces of waxed paper. Describe what happens to the drops.

LESSON: BOTTLES OF WATER

As this lesson emphasizes language related to a poem, you may wish to teach it during your Language Arts period.

Science Concept

1. Water takes the shape of its container.
2. Water occupies space.

English Vocabulary (*actually developed in this lesson)

*bottles	*buckets	*tubs
*pans	*tins	*tanks
*kettles	*cups	*jars
*cans	*pails	*pots
*jugs	*sinks	*glasses

English Sentence Patterns (*actually developed in this lesson)

*Water in _____.

Special Materials Required

Variety of containers.

BOTTLES OF WATER

Rodney Bennet
Source Unknown

Water in bottles
Water in pans
Water in kettles
Water in cans

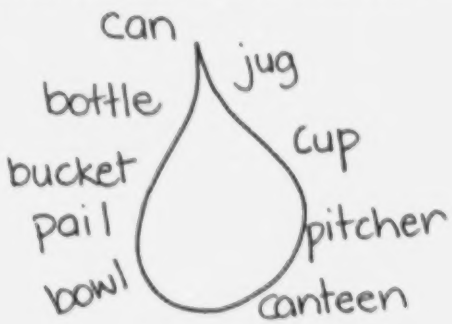
It is always the shape
Of whatever it's in,

Bucket or kettle
Or bottle or tin.

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. Have students gather all containers in the classroom that you could use to hold water. Allow time for them to play with the various containers. Which will hold the most water? the least? What happens to the water when you pour it from one container to another? (Emphasize that the water takes the shape of the container that holds it.)

2. Brainstorm for names of containers that can hold water. Record names on a chart as shown:



Have students locate and cut out pictures of containers. Glue each picture next to the appropriate label on the chart.

Chant the sentence pattern with students substituting the names of various containers.

3. Introduce the poem orally. Place pictures of the various containers in the pocket chart as they are mentioned. Repeat the poem several times encouraging students to join in.

LANGUAGE PRACTICE

L 1. Find the Picture: Place illustrations of containers on the floor. Call out the name of a container using the sentence pattern and a point to a student. S/He must find the picture named and hold it up.

E.g., Teacher: "Water in kettles."
Student: Holds up picture of kettle.

L/S 2. Echo Chant: Recite one line of the poem. Students repeat it immediately.

L/S 3. Oral Cloze: Recite the poem omitting key words. (You may wish to provide visual cues.) Students provide the missing words.

L/S 4. Substitution Drill: Distribute pictures of containers to students. First student holds up his/her picture and names it, e.g., "Water in pails." The next student holds up his/her picture and does the same.

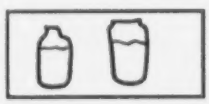
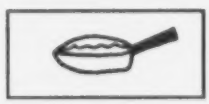
S 5. Group Chant: Distribute pictures of containers mentioned in the poem to students. Have them chant the appropriate phrase for their pictures in turn,

Student #1:	"Water in bottles."
#2:	"Water in pans."
#3:	"Water in kettles."
#4:	"Water in cans."
All:	"It is always the shape of whatever it's in."

Student #5:	"Bucket or"
#6:	"Kettle or"
#7:	"Bottle or"
#8:	"Tin."

Have students place their pictures in the pocket chart as they recite their lines.

Chant the poem again as you place sentence strips next to the pictures:

Water in	
Water in	
Water in	

Chant the poem with students as you point to the words.

Chant the poem again. Place word cards over the picture cards.

Water in	bottles
	pans

Remove the picture cards and distribute them to students. As you chant the poem with the rest of the class, have those students holding the pictures place them in the pocket chart at the appropriate time.

R/W 7. **Vanishing Drill booklets: Have students complete individual booklets using the vanishing technique. Have them illustrate their booklets.**

Eg.:

Page One

Water in b_ _ _ _ _ s

Page Two

Water in p_ _ _ _.

Page Three

W_ _ _ _ in k_ _ _ _ _ _.

APPLICATION

1. People have developed many types of containers over the years to hold and carry water. Have students conduct research into containers made of various materials: animal skins, clay, wood, metal, etc.

2. Write new verses for the poem using the names of containers that were brainstormed in CD#2.

3. Hold a container scavenger hunt. Divide the class into small groups. Give each group a list of containers to find in a specified amount of time.

4. Fold a sheet of paper to make a cup for drinking.

LESSON: FLOATING AND SINKING

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concept

1. Some objects float in water; some sink.

English Vocabulary (*actually developed in this lesson)

*float/s
*floated
*sink/s
*sank
*names of familiar objects

English Sentence Patterns (*actually developed in this lesson)

*Will the _____ sink or float?
* The _____ will sink/float.

*Did the _____ sink or float?
*The _____ sank/floated.

Special Materials Required

Variety of familiar objects
Tubs of water

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. a) Allow plenty of time for students to experiment with a variety of familiar objects. Have them work in small groups. Provide each group with a box of objects and a tub of water. Talk with students as they work; model the sentence patterns wherever possible.

   b) Have students demonstrate the meanings of the words "float" and "sink" using real objects in the tub of water.

   c) In a whole class discussion, ask students to talk about the things they discovered about objects that float and objects that sink. Give each student a paper bag and ask them to find three objects that will float and put them in their bags. Later, meet with small groups of students and have them describe the objects they found. Use the sentence patterns as you test their predictions. Discuss the objects: How are the objects alike? What are they made of? Which objects are hollow? Can you make any of them sink? What do you think makes things float?

   d) Have each student collect some objects that they think will sink. Let them test the objects. Model the sentence pattern as they do so. Discuss the objects: What are their sinking objects made of? Which objects are solid? Can you make any of the objects float? What do you think makes things sink?

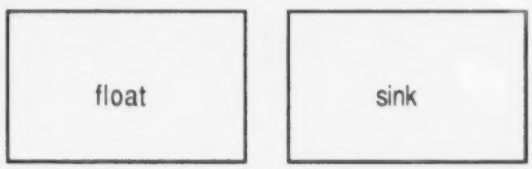
LANGUAGE PRACTICE

L 1. Same/Different: Students listen for words that are the same or different. When they hear a pair that is different, they clap their hands.

E.g., Teacher: "float/float, float/flood, float/flood, float/float, etc."
or "sink/sink, sink/stink, sink/sank, sink/sing,

L/R 2. a) Use wax or light coloured crayon to write the words "float", "floated", "sink" and "sank" on a large sheet of white paper. "Discover" the words with students by painting over them with dark coloured paint.

b) Give each student a set of cards as shown:



Show students a tray of new objects (different from those with which they have working). Let them handle the objects. Stand by the water tub and hold up one of the objects. Ask, "Will the _____ float or sink?" Students hold up their cards showing their predictions:

Record predictions:

	FLOAT	SINK
penny		X
ball	X	
pencil	X	

Model the sentence patterns by referring to the above chart, for expample, "John, Simon, Sarah and Nancy said 'The can will float.' Toby, Mary, and Judy said, 'The can will sink.'"

Now, ask students, "Did the _____ sink or float?" Students hold up the appropriate side of their cards. Model the response, "The _____ floated," or "The _____ sank."

L/S 3. Chain Drill: Sit in a circle with a small group of students. Place a tub of water in the centre of the circle. Put a variety of objects in a bag; pass the bag around the circle. Begin by taking one of the objects out of the bag, holding it up, and asking the student sitting next to you, "Will the _____ sink or float?" S/He responds using the sentence pattern, "The _____ will sink/float" takes the object and puts it in the tub of water. Ask, "Did the _____ sink or float?" Student responds using the sentence pattern, "The _____ sank/floated." S/He then removes another object from the bag and questions the next student. Continue until each student has had a turn.

L/S 4. Object Relay: Divide group into two teams. Place two identical sets of objects at the front of the room, one set for each team, and a tub of water. Call out the name of one of the objects using the sentence pattern, for example:

"Will a spoon sink or float?"

The first member of each team records the predictions of each team member, (using the sentence pattern), then runs to get the object and test it in the tub of water. When they return to their teams question them about the object, for example:

"Did the spoon sink or float""

Teams score a point for each correct prediction. Continue until all team members have had a turn to test an object.

S/R 5. Sentence Strips: Place sentence strips in the pocket chart as show:

Will a _____ sink or float?	
A _____ will sink.	A _____ will float.

Place a variety of objects in a bag. Student selects an object from the bag, holds it in the blank of the appropriate strips and reads the completed statements to the class, for example:

Will a sink or float?	"Will a bowl sink or float?
A will sink.	"A bowl will sink".

Now, have students test their objects in a tub of water. Place sentence strips in the pocket chart as shown:

Did the _____ sink or float.	
The ____ sank.	The ____ floated.

Students take turns placing their objects in the blanks and reading the completed statements.

R/W 6. Worksheet: Give each pair of students a bag of objects. Have them complete a section of the worksheet for each object in the bag.

Will a _____ sink or float?

A _____ will _____.

Will a _____ sink or float?

A _____ _____ _____.

_____ a _____ sink _____ float?

_____ _____ _____ _____.

_____ a _____ ____ or _____?

____ _____ _____ _____.

APPLICATION

1. Have students cut out pictures of objects that float/sink and paste them on the appropriate side of a sheet of mural paper as shown below:

2. Float a polystyrene tray (from a package of meat) in a tub of water. Place nails, one at a time, on the tray. How many nails does it take to sink the tray?

3. Brainstorm a list of objects that float and a list of objects that sink. Use the names of these objects in the following song:

It Floats! It Sinks!

(Tune: This is the Way)
W. Stephenson

Look at the _____ , it floats, it floats!
It doesn't sink, it doesn't sink.
Look at the _____, it floats, it floats
In the water.

Look at the _____, it sinks, it sinks!
It doesn't float, it doesn't float.
Look at the _____, it sinks, it sinks
In the water.

4. a) Give each student a small ball of plasticene. Does the plasticene float or sink? Have them change the shape of the plasticene so that it will float. What shapes and sizes of boats float best?

   b) Give each student an object that floats. How can they make it sink?

5. Give a small group of students four empty bottles of different sizes and a tub of water. Students place the bottles, one at a time, in the water and time how long it takes for each to sink. Graph the results.

6. Which is more buoyant - salt water or fresh water? Fill two containers with water. Add 3 or 4 tablespoons of salt to one container and stir until the salt disappers. Put a hard boiled egg into each container. What happens? Do you think it would be easier to learn to swim in the ocean or in a lake? Why?

7. Put a large empty can into a bucket of water. Put a piece of plasticene in the can. Does the can float? Mark the water level on the side of the bucket and on the side of the can. Keep putting more pieces of plasticene in the can. What happens to the water level on bucket? On the can? What makes the water level change?

LESSON : MIXING THINGS WITH WATER

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concept

1. Many things mix with water; some do not. Some objects show observable changes when placed in water. The water as well as the object may change.

English Vocabulary: (*actually developed in this lesson)

* sugar
* salt
* paint
* oil
* sand
* names of other familiar substances.

English Sentence Patterns: (*actually developed in this lesson)

*Does _____ mix with water?

*_____ mixes with water.

*_____ doesn't mix with water.

Special Materials Required

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE.

1. Provide each small group of students with a jug of water, some clear containers and a variety of solids. Have them experiment with mixing the different solids with water. Circulate among the groups to discuss what they observe.

2. a) Pour some water into several cups and select two or three students to taste the water. Ask them how the water tastes (like plain water). Sprinkle some sugar into the water and stir. What happens? (The sugar disappears.) Ask students where they think the sugar went. Pour some of the sugar water into cups and have the same students taste it. Ask if the water tastes different. What does it taste like? What happened to the sugar? Explain that the sugar mixed with the water and dissolved. How did the students know that the sugar was still there? Could they see it? Smell it? Feel it? Hear it? Taste it?

   Model the sentence patterns:

Teacher	:	"Does sugar mix with water?"
Students	:	"Yes."
Teacher	:	" Yes, sugar mixes with water."

   b) Add two or three drops of cooking oil to water. What happens? Have students watch as you stir the water. Have them describe what happens to the oil. (It does not dissolve.)

   Model the sentence patterns:

Teacher	:	"Does oil mix with water?"
Students	:	"No."
Teacher	:	"No, oil doesn't mix with water."

   c) Repeat the procedure with a variety of other solids. Model the sentence patterns in the same manner as in a) and b).

LANGUAGE PRACTICE

L 1. Predictions: Prepare a chart as shown below. Have students predict which solids will dissolve in water. Record their predictions. Next, test the predictions. Record the results.

	What do you think will happen?		What Happened?	
	Yes	No	Yes	No
oil	X			X
sand				
salt				

Now, make statements about the solids. Students use the chart to decide if the statements are true or false, for example:

Teacher : "Salt mixes with water."

Students : "True."

L 2. True Statements: Divide students into two groups. One group is to listen for things that do mix with water; the other is to listen for things that don't mix with water. Hold up one of the solids and ask, "Does _____ mix with water?" The appropriate group should clap their hands. Model the appropriate statement, " _____ mixes with water." OR " _____ doesn't mix with water."

L/S 3. Spin the Bottle: Sit in a circle with students. Spin a bottle and make a statement, for example:

"Hmmm mixes with water."

The student to whom the bottle points must repeat the statement, inserting the name of an appropriate solid, for example:

"Sugar mixes with water . "

Variation: After some practice, ask a question instead of modelling the statement, for example:

" What mixes with water?"

S 4. Roll the Ball: Place the solids in a line on the floor. Seat students in a line facing the solids. Give a ball to one student and name one of the solids. The student rolls the ball to that item and makes a statement about it.

S/R 5. Sentence Strips.

a) Make sentence strips as shown.

_____ mixes with water.

_____ doesn't mix with water.

Have students take turns holding items or ilustrations in the blanks. Chant the completed statements.

b) Cut the sentence strips into words. Have students rearrange them to make true statements.

S/R 6. Sorting: Give each student two large pieces of paper with statements as shown and a collection of solids.

_____ mixes with water.

_____ doesn't mix with water.

Students sort the solids onto the appropriate sheet them read the statement inserting the names of appropriate solids.

R/W 7. Books: Have each student make two books with 5-10 blank pages.

Students may take the booklets home and find things that dissolve/don't dissolve in water. They should note their findings in the books and illustrate each statement.

APPLICATION

1. Find out how much salt can be added to a cup of water before no more will dissolve.

2. Have students design experiments to see if it is easier to dissolve salt in warm water or in cool water.

3. Set a shallow pan of a salt solution in a place where the water will evaporate. Have students observe the changes daily.

4. Prepare foods that require students to dissolve solids in water. (Jello, powdered juice, etc.)

5. Have students mix solids in water. Have them pour the water through a coffee filter. Record and discuss the results.

LESSON: ABSORBENCY

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concepts:

1. Some materials soak up water; others do not.

English Vocabulary: (*actually developed in this lesson)

* wet
* damp

absorb/s

absorbency

absorbent

* soak up/soaks up
* name of various materials/objects

English Sentence Patterns : (*actually developed in this lesson)

* Does _____ soak up water?
* _____ soaks up water.
* _____ doesn't soak up water.

Special Materials Required:

Small squares of various materials (paper, fabric, sponge, leather, plastic, etc.)
Large squares of various materials

Eyedroppers

Variety of objects

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE:

1. Collect a variety of familiar objects: a sponge, fabric, a rock, a piece of paper, a piece of plastic, etc. Describe and record the way each object feels. Immerse the objects in a tub of water for a few minutes. Describe and record the way they feel now. Compare the before and after descriptions.

2. Place a large square of plastic over a bowl and fasten securely. Try to pour some water into the bowl. What happened? Record results on a chart. Repeat with squares of other materials. Discuss the results; model the sentence patterns wherever possible.

3. Weigh a piece of fabric before and after soaking it in water. Compare the results. Do you think a brick soaks up water? Weigh a brick. Soak it in water for an hour. Weigh it again. Model the sentence pattern.

4. a) Talk about clothes that people wear on rainy days. Examine some of these clothes. What fabrics are used to make these clothes? Why?

   b) Give each pair of students several small squares of different materials, an eyedropper and a jar of water. Have them squeeze a few drops of water onto each square and observe what happens. Have them sort the squares according to those that soak up the water and those that don't. Circulate among students and model sentence patterns.

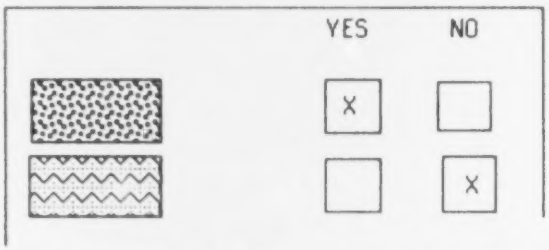
LANGUAGE PRACTICE:

L 1. Beanbag Throw: Place fabric samples on the floor. Make a statement: "Hmmm soaks up water." One student attempts to throw a beanbag on an appropriate fabric. S/He then tests the fabric to see if his/her prediction was accurate.

L/S 2. Gossip: Sit with students in a circle. Squeeze a few drops of water on one of the squares of fabric. Whisper an appropriate statement (ie. "_____ soaks up/doesn't soak up water.") to the first student. That student whispers the statement to the next student, and so on around the circle. The last student repeats the statement aloud. Repeat with other kinds of fabric.

S 3. Hot Potato:

a) Make a chart showing which fabrics absorb water and which do not.



Sit in a circle with students. Pass around one of the fabric samples as music plays. When the music stops, the student holding the fabric asks, "Does _____ soak up water." The other students respond using the sentence pattern. Continue with other fabric samples.

b) Subsitution: Sit in a circle with students. Distribute fabric samples to students. Hold up your sample and say, for example, "Plastic doesn't soak up water." Any student holding a fabric that does not absorb water should hold up their sample and make a statement about it (using the sentence pattern.)

S/R 4. Sentence strips: Place the following sentence strips in the pocket chart.

_____ soaks up water.

_____ doesn't soak with water.

Distribute fabric samples. Have each student, in turn, determine whether his/her fabric is absorbent or not, then place it in the appropriate blank and read the completed statement.

S/R 5. Clothespeg Match: Make up several clothes pegs of each type shown:

Have students pin clothespeg to appropriate fabric samples and read the completed statements.

R/W 6. Flip Books: Have students collect their own fabric samples and make flip books as shown.

APPLICATION:

1. Have students make collection so things which are especially designed to soak up or to repel water. Use these items to make collages.

These Things Soak Up Water

These Things Don't Soak Up Water

ACTIVITY IDEAS

TOPIC B: FORMS OF WATER

SCIENCE /SOCIAL STUDIES

1. Who can melt an ice cube the fastest? Give each student an ice cube. At a signal, everyone heats their ice by any means except smashing it, putting it in their mouth or heating it with a match, candle, etc. The first person to completely melt his/her ice is the winner.

   Who can keep an ice cube longest? Give each student an ice cube. At a signal, students find insulating materials, devise a package, and place their ice cube in it. (Make sure a variety of materials is available - cloth, paper, styrofoam chips, leaves, moss, etc.) Check the ice cubes periodically. The person whose ice lasts longest is the winner. Discuss methods used to melt/save ice. Which were most effective? Why?

2. Rainy Days activities: A) Watch rain as it falls on a window. What shape are raindrops? Are they all the same size? What colour are they? What do they sound like when they hit the window? B) Go outside. Where do raindrops make the biggest splashes? Where are there puddles? Where are the puddles biggest/deepest? What colours are the rain clouds? C) Talk about why it's raining. Heat water in a kettle. As the water is heating, put cold water and ice cubes in a saucepan. When the water in the kettle is boiling, hold the saucepan full of cold water just above the

MATHEMATICS

1. Measure the temperature of boiling water. Place a thermometer in a cup of water. Place it in the freezer. What temperature is shown when the water is frozen.

2. Fill a styrofoam cup with fresh water and another with salt water? (Be sure to use the same amounts of water). Which will freeze first? Which will then melt first?

3. Present students with a big block of ice, a container of crushed ice and ice cube. Ask them to predict and explain which will melt first. Observe and discuss results.

LANGUAGE ARTS

1. Write poems about water in the shape of waterdrops.

Continued...

steam. (KEEP YOUR HANDS OUT OF THE STEAM!) Which water droplets form on the bottom of the saucepan. Some of the droplets will become large enough to drip off. When this happens, it's "raining". What does the kettle represent? What represents the clouds? Can you make a "rain shower" develop more quickly? Can you create a "downpour"?

3. Make plasticene molds in different shapes and sizes. Fill them with water and place in the freezer. Which will freeze first? last?

4. Talk about people who work in and on the water (fishermen, barge workers, deep sea divers, etc.). Introduce language describing their clothing and equipment.

5. Fill one glass with ice water and another with warm water. Let the glasses sit for a few minutes. Feel the outside of both glasses. Do they feel the same. What happened?

MUSIC, POEMS AND STORIES

1. "Listen to the Rain"
2. "Raindrops Keep Falling on My Head"
3. The Snow Day
4. Georgie and the Noisy Ghost

PHYSICAL EDUCATION/MOVEMENT

ART

1. Freeze water in different containers (balloons, milk cartons, pie pans, paper cups, etc.) Remove the ice from the containers and use to make ice sculptures.

2. Make a rainy day collage. Use cotton batting for clouds, confetti for rain drops, etc.

3. Put a blob of fingerpaint on glossy fingerpainting paper. Use ice cubes to spread and dilute the paint.

4. Make a collage of things that contain water in its various forms.

SPECIAL ACTIVITIES

1. Provide a table of materials for students to investigate the liquids and solid states of water. Encourage them to try dissolving various liquids and powders, to try floating objects, etc.

LESSON: FORMS OF WATER

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concepts:

1. Water exists in three forms: solid
   liquid
   gas

English Vocabulary: (*actually developed in this lesson)

* solid	* ice	* hail	* snow
* liquid	* water	* rain	* dew
* gas	* steam	* fog	* vapour

English Sentence Patterns : (*actually developed in this lesson)

What is water called when it is a solid/liquid/gas?
When water is a _____ it is called _____.

* What is an example of water as a solid/liquid/gas?
* _____ is an example of water as a solid/liquid/gas.

Special Materials Required:

Polaroid camera

Pictures of water in various forms (icicles, snow, rain, dew, steam, fog, mist, etc.)

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. a) Show students a bowl of peanuts. Discuss how they look, feel and smell. Put the peanuts in a blender and blend until you have made peanut butter. Compare the look, feel and smell of the peanut butter to that of the peanuts. Emphasize that the substance of both the peanuts and the peanut butter is the same; it is the form that has changed.

   b) Provide students with plastic bags holding such things as breadcrumbs, sawdust, crushed candy, a beaten egg, etc. Have them identify and match the items in the bags to samples of the original objects (slice of bread, piece of wood, hard candy, raw egg, etc.). Discuss how the objects have changed. Emphasize that the substances are the same; the forms have changed.

2. Show students a glass of water. Discuss its properties; lead students to the conclusion that water is a liquid. Now show students a bowl of ice cubes. Discuss what ice cubes are made from. Discuss their properties. How are the ice cubes different from the water? (Lead to the conclusion that an ice cube is a solid and not a liquid as is the water.) Emphasize that the water in the glass and the water in the ice cubes are the same substance in different forms. Model the sentence patterns:

   "The water in the glass is an example of water as a liquid."
   "An ice cube is an example of water as a solid."

   Brainstorm examples of water as a liquid (e.g., dew, rain, etc.).
   Record students' ideas on a water drop shape.

   Show students a kettle of water. Discuss the properties of the water. Ask students if they know what will happen when you boil the water. Will anything come out of the kettle? Boil the kettle and discuss observations. (Lead to the conclusion that the steam is a form of water.) Model the sentence pattern, "Steam is an example of water as a gas." Discuss other examples of water as a gas (clouds, fog, mist) with students. Record these on a cloud shape.

3. Go on a walk to find examples of water in its different forms. Take pictures with a polaroid camera or have students make quick sketches.

4. Have students look through magazines to locate pictures of water in its various forms. Categorize the pictures with studentsaccording to the form of water it shows. Model the sentence patterns as you discuss each picture.

   Model the question/answer patterns using a puppet: Point to the display of pictures and ask the puppet, "What is an example of water as a gas?" The puppet selects an appropriate picture and responds, "Mist is an example of water as a gas."

LANGUAGE PRACTICE

L 1. Which Picture?: Display several pictures (collected during CD #3). Make a statement using the sentence pattern. Students select the picture that represents that statement. For example:

Teacher: "A cloud is an example of water as a gas."

L 2. Middle Man: Place two sets of pictures on the floor in lines opposite each other. Assign one student to each picture and choose a middle man who has no picture. When the teacher calls out a statement, the students standing on the appropriate pictures attempt to exchange positions before the middle man can take one of their palces. If the middle man succeeds, s/he takes over that picture and the unlucky runner becomes the new middle man.

L/S 3. Parrots: Students pretend to be parrots and repeat what the teacher says. They repeat only true statements, however. For example:

Teacher: "Rain is an example of water as a liquid."
(Students repeat.)

"Rain is an example of water as a solid."
(Students don't repeat.)

L/S 4. London Bridge: Two students form a "bridge" with their arms. The other students walk under the bridge as music plays. When the music stops, the bridge drops and traps one student. S/He must answer a question posed by the teacher or other students. For example:

Teacher (Other Students): "What is an example of water as a liquid."
Students : "Rain is an example of water as a liquid."

S 5. Categories : Students stand in a circle with one student , IT, standing in the centre. It bounces a ball to a player and asks a question. The player who catches the ball must name an example before IT counts to 10. If successful, s/he takes IT's place. For example:

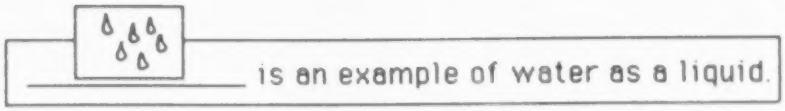
IT : "What is an example of water as a solid?"
Player : "Hail is an example of water as a solid." (Player becomes it.)

S/R 6. Sentence Strips: Place sentence strips in the pocket chart as shown:

What is an example of water as a liquid?

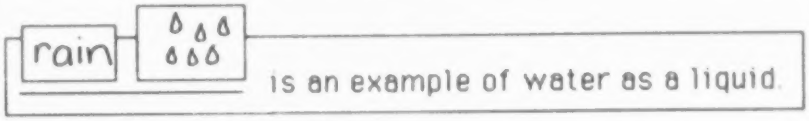
_____ is an example of water as a liquid.

Have students select pictures that go with the statement:



Chant the statements as you place each picture in the sentence strip.

Make up word cards and place them next to the appropriate pictures as you chant. Then, remove the pictures and have students read the statements to you.



Repeat this procedure with the other question/answer pairs:

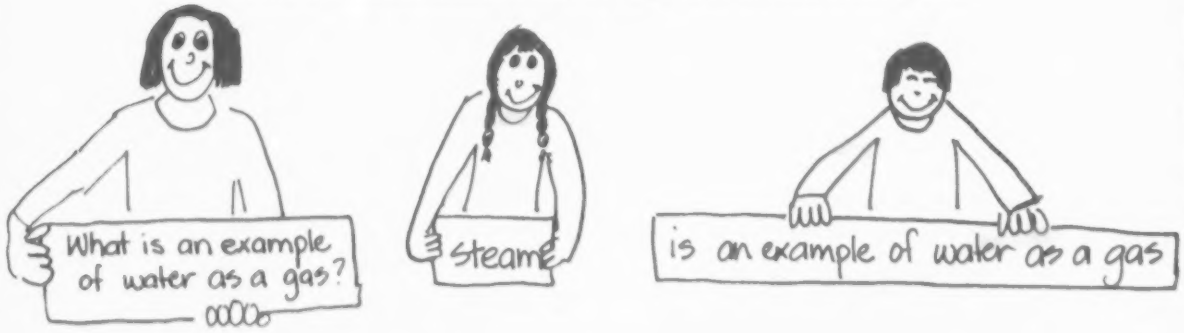
What is an example of water as a gas?

_____ is an example of water as a gas.

What is an example of water as a solid?

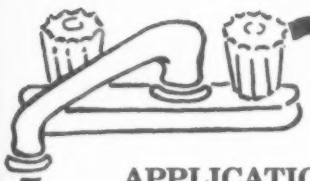
_____ is an example of water as a solid.

Distribute sentence strips and word cards to students. Students must find others who belong with their group. They should then arrange themselves so that the question/statements may be chanted to the rest of the group.



R 7. Classification Containers: Make up sentence strips using the pattern. Students classify the strips.

R/W 8. Card Game: Make up sentence strips, each with one word deleted. Write deleted words on word cards. Each player draws four word cards. The first player turns over the top sentence strip. If s/he has a word card that completes the sentence, the sentence strip and the word card are placed on the table. The player draws another word card to replace the one that was played. If s/he cannot play a word card, the sentence strip remains in the centre. The next player can play a sentence strip that is face up in the centre or draw a new one from the pile. Play continues until all the sentence strips are turned up. Players copy any sentence they have completed.



APPLICATION

1. Discuss sports that use ice or water (hockey, speed skating, figure skating, diving, swimming, water polo).

2. Have an ice party. Serve sherbet or popsicles made from fruit juice.

3. Weigh basins of ice, snow, water and ice cubes. Graph and compare the weights.

4. Discuss how ice tastes/feels/looks. Develop "icy" words: freezing, dripping, icy,

LESSON: HEATING AND COOLING WATER

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

Science Concepts:

1. Water exists in three forms: solid
   liquid
   gas
2. Water can be changed to a gas when heat is added.
3. Water can be changed to a solid when heat is removed.
4. Some changes are reversible.

English Vocabulary: (*actually developed in this lesson)

* water	* liquid	
* ice	* solid	* cool
* steam	* gas	* heat

English Sentence Patterns: (*actually developed in this lesson)

* What happens when you cool water/steam?
* When you cool water/steam it changes into ice/water.

* What happens when you heat water/ice?
* When you heat water/ice it changes into steam/water.

Special Materials Required

Small candles, clothespegs, test tubes

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. Discuss the words "heat" and "cool." Make a list of ways in which you can heat something and another list of ways in which you can cool things. Make a list of foods that we heat before eating and another list of foods that we keep cool.

2. a) Fill a bowl with water. Put it in the freezer (or outside if it's winter). Have students predict what will happen to the bowl of water. Record their ideas on a chart.

When the water has frozen, bring the bowl back into the classroom. Ask questions to encourage discussion:
What happened to the water in the bowl?
Is the ice a solid, a liquid or a gas?
Where did the water go?
What happens when you cool water?

Model the sentence pattern, "When you cool water it changes into ice."

Ask students if they think that the ice can be changed back to water. How can this be done? Try some of students' ideas. What happened? Model the sentence pattern: "When you heat ice it changes into water."

b) Divide the class into small groups. Provide each group with the following equipment: a small candle, a clothespeg, a test tube. Have students attach their clothespegs to the test tubes. Place a bit of water in each of the test tubes. Light the candles. Demonstrate how to heat the water in the test tube by moving it to and fro through the flame to heat it evenly. Don't hold the tube too close to the flame or it will become coated with carbon. Ask students to carefully observe what happens when the test tube is heated. Appoint one student in each group to record observations. Have students continue until there is no water left.

Ask questions to encourage discussion after the experiment:

What happened to the water in the test tube?
Did you see anything come out of the test tube?
Is the steam a solid, a liquid or a gas?
Where did the water go?
What happens when you heat water?

Model the sentence pattern, "When you heat water it changes into steam."

Repeat the experiment. This time, have one team member hold a piece of aluminum foil over the boiling water with a clothespeg. Have them observe what is on the foil. (Water.) Ask them to explain where the water came from. (It changed to steam and then back to water.) Ask, "What made the water turn into steam?" (Heat.) "Why did the steam turn back into water?" (It cooled.)

Model the sentence pattern: "When you cool steam it changes into water."

LANGUAGE PRACTICE

L 1. True/False: Ask questions of your C.A. (or a puppet) using the sentence pattern. Students indicate by a physical response whether the answer is true or false, for example:

Teacher : "What happens when you heat water?"
C. A. : " When you heat water it changes into ice."
(Students stamp feet.)
OR "When you heat water it changes into steam."
(Students clap.)

L. 2. Change Game: Students stand in pairs, back-to-back, with elbows interlocked. They change partners when they hear a statement previously specified, for example:

Teacher: "Change partners when you hear the sentence, 'When you heat water it changes into steam.' When you cool water it changes into ice; when you heat ice it changes into water; when you heat water it changes into steam; etc."

L/S 3. Catch the Error: Make statements using the sentence patterns, but substitute an incorrect word in each statement. Students try to catch the substitutions and provide the correct words, for example:

Teacher : When you drink water it changes into steam."
Students: "When you heat water it changes into steam."

L/S 4. Oral Cloze: Make statements omitting a key word. Students supply the missing word, for example:

Teacher : "When you heat water it changes into hmmmmm."
Students: "When you heat water it changes into steam."

L/S 5. Chain Drill: Sit in a circle with a small group of students. Ask a question of the student sitting next to you, for example, "What happens when you heat ice?" That student responds, "When you heat ice it changes into water," then asks a question of the next student.

S/R 6. Word Detective: Write one of the statements on the board and read it with students. Have them close their eyes as you erase one of the key words. Students open their eyes and tell you which word you erased.

R 7. Zip Technique: Write question/answer pairs on an overhead transparency. Cover some of the words with masking tape. Project the passage and read it with students. Have them predict what the covered words are. When the group has agreed on one word for each blank, zip the tape off. Compare the covered words to the students' predictions.

S/R 8. Surprise Packet: Wrap a small present (which can be shared by all players) in layers of newspaper. Between each layer of newspaper and the next place a slip of paper with a question written on it. If the student can read the question and answer it, s/he may remove the next layer of newspaper before passing the present on to the next player.

R/W 8. Sentence Building: Students create sentences by choosing and combining words or phrases from four columns. They then pass their sentences on to another student who decides if the sentences are true or false.

When you heat	ice	it changes into	steam
When you cool	water		water
	steam		ice

APPLICATION

1. Use a thermometer to compare the temperatures of ice water, tap water and boiling water.

2. Put ice cubes of the same size on various surfaces (tin foil, paper towel, styrofoam meat tray, wood, etc.). Record the length of time it takes for each ice cube to melt. Graph and compare the results. Which cube melted first? Which cube melted last? What would you do if you wanted to keep an ice cube from melting for as long as possible?

3. What are some things that heat can melt? What are some things that heat can boil? Find pictures of brainstormed items and use them to make collages.

ACTIVITY IDEAS

TOPIC C: WATER IS PRECIOUS

SCIENCE /SOCIAL STUDIES

1. Water is not taken for granted in most places as it often is in Canada. Sometimes we do not think about where our water comes from and where it goes after it leaves our homes and factories. Make a list of some ways that people misuse their water supplies. Make a list of ways that people could save water.

2. How/From where does your community get its water? How does the water get to your house?

3. Have each student plant seeds in two styrofoam cups. Have them water the seed in one cup and not the other. Ask them to predict what will happen. Observe and describe the results.

4. Look at a picture (in a nature magazine) of an underwater scene. Describe the living things that you can see.

5. Take a large water sample from a nearby pond. What living things can you see in it?

6. Look at photographs of people living in a jungle and people living in a desert. What things are different? the same? What things are hardest for them? easiest?

MATHEMATICS

1. Find a leaky tap in your school/home. Collect all the water that escapes from the tap over a 24 hour period. How much water was wasted in one day? How much would be wasted in a week? a year?

LANGUAGE ARTS

MUSIC

ART

1. Cut pictures from magazines that show people using water in different ways. Use the pictures to make a collage.

2. Draw an underwater scene with wax crayons. Paint a light blue wash over it. (Students could do this individually or contribute to a class mural).

SPECIAL ACTIVITIES

1. Cleaning Water: Collect water samples from a variety of sources (e.g., lake, puddle, shower, rain). Examine each sample for clarity, colour, and smell. DO NOT DRINK THE WATER! Use coffee filters or make your own from paper towels. Place a cone in the neck of a large jar. Run one sample of water through the filter. Does the water look cleaner now? Check the filter for any particles. Repeat for other water samples.

2. Conduct a research project about droughts (Ethiopia, the "dirty 30's", etc.). Collect newspaper/magazine articles and photographs. Write letters to various agencies (U.N., CUSA, etc.) to gather more information.

3. Set up an aquarium in your classroom.

4. Give each student a piece of paper cut into the shape of a water drop. Have them illustrate one way that they use water. Use the "water drops" to make a collage.

PHYSICAL EDUCATION/MOVEMENT

1. Mime different situations in which people use water (Eg. swimming, fireman using hose, etc.)

LESSON : WE USE WATER IN MANY WAYS

As this lesson emphasizes language related to social studies concepts, you may wish to teach it during your Social Studies period.

Social Studies Concept

1. People use water in many ways.

Science Concept

1. Water is necessary to all living things. (Review)

English Vocabulary: (*actually developed in this lesson)

* drinking
* cooking
* washing
* bathing
* swimming
* boating
* fishing
* other vocabulary brainstormed with students

English Sentence Patterns: (*actually developed in this lesson)

* How do we/people use water?
* We/People use water for _____.

Special Materials Required

Tape recording of water being used in different ways

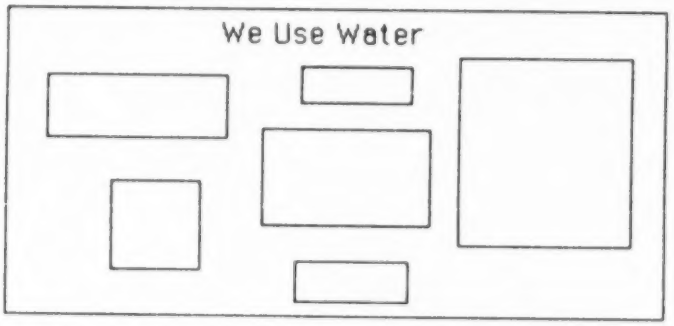
Polaroid camera and film

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. Review the concept that all living things need water to live. (Refer to Language Development/Science units from the Life and the Environment theme).

2. Prepare a tape of people using water in many different ways (e.g., a washing machine, washing hands, tap running, outboard motor, kids splashing and swimming, etc.) Play tape to students and have them guess what each sound is. Model their responses using the sentence pattern.

3. Go for a walk around the community. Take photographs of people using water. Use them to make a bulletin board:



Model the sentence pattern as you place photographs on the board.

4. Have each student keep a daily record of their water use. This may be in pictoral or written form. Compare records. What were the most common uses of water?

LANGUAGE PRACTICE

L 1. Simon Says: Call out statements using the sentence pattern. Students act out the activity described only if the statement is preceded by the words "Simon Says." For example:

Teacher: "People use water for cooking." (Students stand still.)
"Simon says, 'People use water for cooking.'" (Students pretend to be cooking.)

L/S 2. Cumulative Chain Drill: Sit in a circle with students. Make a statement using the sentence pattern. First student must repeat your statement and add another item. Continue around the circle until all students have added an item. For example:

Teacher: "We use water for washing clothes."
Student A: "We use water for washing clothes and for cooking."
Student B: "We use water for washing clothes, for cooking and for bathing."

L/S 3. Three Word Clues: Give three one word clues about a situation that involves using water. Students try to guess the situation, for example:

Teacher: "Bucket, mop, Mr. Clean."
Students: "We use water for washing floors."

L/S 4. Mumbo Jumbo: The object of this game is to find out what Mumbo Jumbo stands for. One player is IT. IT leaves the room while the rest of the group decides on what Mumbo Jumbo is. (It must be a word that fits in the statement: People use water for _____.) When IT returns, s/he can ask five questions that can be answered with "Yes" or "No" to help determine what Mumbo Jumbo is. For example:

Group: "People use water for fishing." (Determined while IT is out of the room.)

IT: "Do people Mumbo Jumbo for food?"

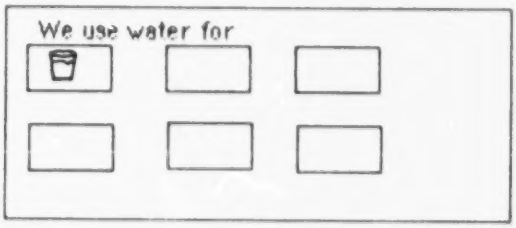
Group: "Yes."

IT: "Do people Mumbo Jumbo in the winter?"

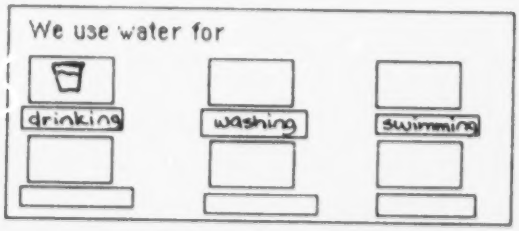
Group: "Yes."

When IT has guessed what Mumbo Jumbo stands for or has used up five questions, another player becomes IT.

S 5. a) Picture Bank: Have students cut pictures from magazines that show different uses of water. Use the pictures to make a picture bank. Write the sentence pattern on a sentence strip and place it above the pictures. Chant the pattern; substitute different items as you point to the pictures.



S/R b) Attach paper clips to the lower corners of each picture. Have students attach name of each activity to the correct picture



Chant the statements with students as you point to the words. Distribute word cards to students. Have each student place his/her card on the appropriate picture and read the completed sentence.

R 6. What's the Word?: Write vocabulary items on cards in the shape of water drops. Scatter them on the floor. As music plays, students dance or skip around the cards. When the music stops they must put a foot on one of the cards. Call out one of the words. Any students standing on that word are out of the game.

R/W 7. Tachistoscope: Have each student or pair of students make up their own tachistoscope. Encourage them to use a shape related to water. They may use vocabulary items already practised or come up with new ideas.

W 8. Mural: Have students make a mural showing the ways in which we use water. Have them make a sentence strip describing the activities depicted. Use these to label the mural.

APPLICATION

1. Write advertisements for water. Brainstorm slogans. Have students illustrate.

2. Make mobiles about water:
   - animals that live in water
   - ways in which people use water
   - sources of water

3. Collect water from many different sources. Pour the water through coffee filters. Examine the filters. Is water that looks clean always pure?

4. Talk about problems that people have with water (water pollution, floods, droughts, etc.) Find articles in newspapers and magazines that describe these problems.

5. Where does the water you use at school come from? at home?

6. Do you think people will ever use up all the water on earth? What will happen if they do?

ACTIVITY IDEAS

TOPIC D: BUBBLES

SCIENCE /SOCIAL STUDIES

1. How many different things can you use to make a bubble? Collect a variety of items and test their bubble-blowing potential. (Rubber bands, straws, tubing, cardboard tubes, funnels, etc.)

2. Blow bubbles up in the air and observe what they do. Do they go straight up? Why do they float around? What are they filled with? Now, blow bubbles in a bowl of water. Observe and discuss what the bubbles do. Blow up balloons and compare them with the bubbles.

3. Experiment with various bubbles solutions (vary amount of glycerin, type of detergent). Which one makes the strongest bubbles? The most colourful? the biggest?

MUSIC

1. Bubbles and Bubbles (Mt. Gravatt)

2. "Tiny Bubbles"

MATHEMATICS

LANGUAGE ARTS

1. Blow up a balloon and prick it with a pin. What words describe the sound? Record on a chart. Make a soap bubble and burst it. What words describe this sound? Record on a chart. Compare the charts.

2. Describe the shape of a bubble

3. Define a bubble. Is a volleyball a bubble? A balloon? An egg? Make a list of all the bubbles you can think of.

PHYSICAL EDUCATION/MOVEMENT

1. Have a bubble-passing relay race.
2. Try to catch bubbles using different things (hands, funnel, sheet of paper, etc.)
3. Create games to play with bubbles: bubble volleyball, bubble tag, bubble hockey, etc.
4. Pretend to be bubbles being slowly blown up. Float around the room.

LANGUAGE ARTS

1. List the colours you see in a bubble.
2. List other words beginning.
3. List ways of making bubbles. (Use a recipe format)
4. Catch a bubble, break it. Describe how it bursts.
5. Write cinquain poem about bubbles.
6. Pretend you are caught in a balloon and sent into space - write a story about it. Write a story about a "bubble city".

SPECIAL ACTIVITIES

1. Have bubble races and games.
2. Put different lights behind a bubble eg. candle, flashlight, mirror.
3. Can you bounce a bubble?
4. Can you heat, freeze, squash, shrink a bubble?
5. Can you bend a bubble? Cut a bubble?

ART

1. Bubble Mobiles: Dip lengths of string into liquid starch. Wrap wet strings around inflated balloons and let them dry. Pop the balloons and remove them.
2. Build bubble sculptures.
3. Add food colouring to your bubble solution. Fill the room with coloured bubbles?

LESSON: BUBBLES

As this lesson emphasizes language related to descriptive vocabulary, you may wish to teach it during your Language Arts period.

English Vocabulary : (*actually developed in this lesson)

* bubble/s
* descriptive words brainstormed with students

English Sentence Patterns: (*actually devloped in this lesson)

* I blow _____ bubbles.
* I blow bubbles that _____ .

Special Materials Required

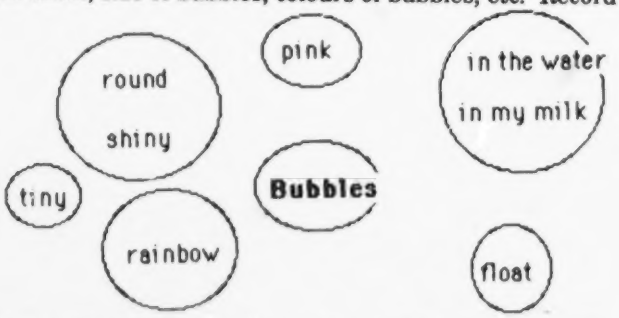
Variety of liquids

Variety of "bubble blowers"

CONCEPT DEVELOPMENT/LANGUAGE EXPOSURE

1. a) Provide a variety of materials for blowing bubbles (straws, bubble wands, thin wire, tin cans with both ends removed, styrofoam cups, etc.) and variety of liquids (pop, water, milk, bubble solution, etc.). Allow plenty of time for students to experiment with making bubbles.

   b) Brainstorm for words that describe bubbles: what they look like, where you might see them, size of bubbles, colours of bubbles, etc. Record them on a chart:



Chant the words. Use the sentence patterns wherever possible.

LANGUAGE PRACTICE

L. 1. Bubble Blow-Up: Tell each student a description of bubbles, for example, "shiny bubbles." At least two students should have the same descriptions. Seat students on chairs arranged in a circle. Stand in the centre of the circle and call out one the descriptions, for example, "I blow rainbow bubbles." All students with that description, ie. "rainbow bubbles", change places. Occasionally, call "Bubble blow-up." Then everyone tries to get to a new chair. Change the descriptions given to students often.

Variation: This could be done as a reading activity by writing the descriptions on bubble-shaped cards and distributing them to

L/S 2. Gossip: Sit in a circle on the floor with a small group of students. Whisper a statement to the student sitting next to you. That student whispers it to the next student and so on until it has been whispered to all students in the group. The last student repeats the statement aloud.

L/S 3. a) Cumulative Chain Drill: Sit in a circle with a small group of students. Make a statement. The student next to you repeats your statement with another descriptor added. Continue around the circle in this manner until all students have added an item. For example:

Teacher: "I blow round bubbles."
Student A: "I blow shiny round bubbles."
Student B: "I blow shiny round bubbles that float."
Etc.

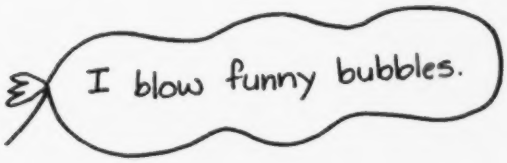
S/R b) Write the statement "I blow bubbles," as shown below and place in the pocket chart.

I blow		bubbles

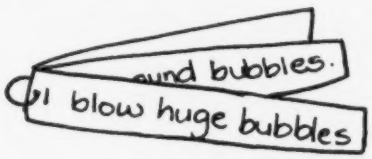
Repeat the activity as in 3a), but this time write the students' words/phrase on cards and insert them in their correct positions in the pocket chart. See how long a sentence you can make.

I blow	shiny	round	rainbow	bubbles	that float

R. 4. Balloon Toss: Write sentences on balloons. Toss the balloons into the air. Students catch the balloons and read the sentences.



R/W 5. Books: Have students make their own sentence strip or balloon shaped books. Have them chant them to each other.



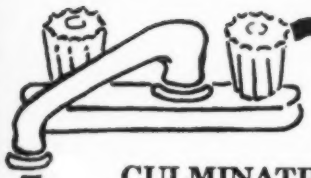
APPLICATION

1. Use the poem "A Maker of Boxes" from Sound of Laughter by Bill Martin, Jr. (Holt, Rinehart and Winston, 1968) as a pattern to write about bubbles. Use words brainstormed during Concept Development activities. This activity is best done as a group activity because there are many ideas needed to complete the pattern. Here is the pattern:

   Hello! My name is Mr. _____. I am a blower of bubbles.
   I blow _____ bubbles, _____ bubbles, _____
   bubbles, and _____bubbles.
   And all of them are _____.
   On Monday I blow _____ bubbles.
   _____ and _____ and _____.
   On Tuesday I blow _____ bubbles.
   _____ and _____ and _____.
   On Wednesday I blow _____ bubbles.
   _____ and _____ and _____.
   On Thursday I blow _____ bubbles.
   _____ and _____ and _____.
   On Friday I blow _____ bubbles.
   _____ and _____ and _____.
   On Saturday I don't blow bubbles. I make books about bubbles. I make _____
   books and _____ books and _____ books and _____ books.
   On Sunday I don't blow bubbles either. I just lay around and dream about all the bubbles I'll blow next week.

   Make the poem into a big book with illustrations done by the students.

2. Learn the peom "Bubbles" by W. Stephenson. Write the poem on chart paper in a rebus format. Have students make up new verses for the poem.



CULMINATING ACTIVITIES

1. Theme Notebooks: Have students design their own covers for their Water Notebooks. These notebooks could include favourite poems, songs or chants, pictures, small craft projects, worksheets, stories, and poems that students have written, etc. related to the dinosaur theme. It is important to allow students to choose what they will put in their notebooks. The notebooks are their personal "souvenirs" which they may take home to share with family and friends.

2. Have a "bubble derby." Set up bubble-trick stations and have students move through them in a specified time. (Recipe for good bubbles: 2 parts dishwashing liquid to 6 parts water. If you can obtain glycerine it will make your bubbles stronger.)

   Station #1: Split one bubble into two.

   Station #2: Combine two bubbles into one.

   Station #3: Blow a little bubble inside a bigger bubble.

   Station #4: Wet the surface of a shallow pan with some bubble solution. Wet one end of a straw in the bubble solution. Hold the end of the straw slightly above the pan's surface and blow gently. You should see half a bubble forming on the pan. Put together several half-bubbles to make a caterpillar. Try to make it start small and end small.

   Station #5: (Provide bubble frames: Cut a long straw in half. Run some thread through the two straws. Knot the thread and pull the knot inside one of the straws.) Make a super bubble by placing the frame carefully in the bubble solution, then slowly lifting it out so that there is a soap-film window stretched across the rectangle. Hold the frame at arm's length just below your waist. Pull the frame upward toward you. A bubble will start to form. To close it off, gently bring the two straws together until they touch as you swing the frame up.

Station #6: Have someone hold the bubble frame and put your hand through the bubble film. Experiment to find the right conditions. Hint: Wetting your hand and arm may help.

3. Information Booklet: Develop an information booklet about water using the model from The Important Book by Margaret Wise Brown, Harper & Row, 1949.

The important thing about water is that _____. It is _____. It is _____. But the important thing about water is that _____.

4. Patchwork Poem: Browse through magazines and cut out words or groups of words that could relate to water. Arrange the words on a sheet of paper. Rearrange the words and add more words until the appearance is satisfying, then paste them down. Clip suitable illustrations to accompany the peom.

5. Word Association: Begin by stating the word "water" and one association for it:

"Water reminds me of wet, and wet reminds me of rain.

First student repeats your statement and adds his/her association:

"Water reminds me of wet, wet reminds me of rain, and rain reminds me of snow."

Continue in this way until every student has had a chance to contribute an association.

6. Outright Lies: Sit in a circle with a small group of students and pass an ordinary glass of water around. As the water is passed, each player must tell a lie about it. After everyone has had a turn, decide who told the most interesting lie. For example:

"This is the glass of water that saved my life when I was dying of thirst on the Sahara Desert." "This is the first glass of water ever brought back from the moon."

7. Scavenger Hunt: Divide class into small groups. Provide each group with a cassette tape on which you have recorded directions similar to those below:

   Find something red that floats. Find something red that sinks. Find something that we eat that floats. Find something that we eat that sinks. Etc.

8. Make water shape poems.

EVALUATION ACTIVITES

It is important to assess what your students have learned during this unit. The following activities evaluate language and content. There are additional evaluation ideas and record keeping forms in the booklet Evaluation Guidelines for use with the Science Language Development Units (grades 1, 2, 3).

You can do them orally (in small groups or with individuals) to test listening and speaking or on paper to test reading and writing. These are only suggestions; you can substitute different content or vocabulary items to make them more appropriate for your students. You probably will want to include many other activities as well.

1. Tell or give students sentence beginnings to match to sentence endings.

When you heat water	it melts.
When you cool water	it changes into ice.
	it changes into juice.
	it changes into steam.

2. Tell or give students the beginning of a sentence and a number of possible sentence endings. They indicate which sentence endings are appropriate for the sentence beginnings.

People use water for	fishing.
	swimming.
	cooking.
	building.
	drinking.

3. Pretend that you are a visitor from a planet that has no water. Have students describe water to you. (This may be oral/written) water to you.

POEMS, SONGS, STORIES

WATER

Edith H. Newlin
Source Unknown

Sprinkling
Wrinkling
Softly tinkling
Twinkling
Tiny brook,
Running
Funning
Hiding, sunning
Cunning baby brook,
Joins a grown-up brook
Dashing
Splashing
Sunlight flashing
Stony grown-up brook
Joins the river
Broad and smooth river
Deep as deep can be
Slower, slower, slower flowing,
Wider -- wider -- wider -- growing
Till it empties all its waters out
into the great huge sea.
Rolling, rolling, tossing, rolling
Splashing waves forever rolling in
the great wide sea.

BOTTLES OF WATER

Rodney Bennett
Source Unknown

Water in bottles,
Water in pans,
Water in kettles,
Water in cans -

It is always the shape
Of whatever it's in,
Bucket or kettle,
Or bottle or tin.

WATER

Morisseau-Leroy
Source Unknown

Water that was here before everything
Water that will remain when all is finished
water used to baptize children
water used to wash our bodies
when we are dead

rain water
river water
water in fountains

drops of water in the early morning dew
round drops of the new moon
water that makes our gardens beautiful
water that we drink,
that we use for cooking our food

water in cups made from trees
water in big metal barrels
water in earthen jars

Water that we spill when we call
on the spirits
water deep in the river bottom
where children bathe
water in the sea where the fish swim

pool water
lake water
sea water

All you waters that come from the sky,
All you waters that run on the earth.
Give us strength
so we can hold on,
Give us courage
so we can resist,
so we can survive

Water in the dew,
in the waterfalls
water that runs under the earth
water that boils over the fire,
that can also kill the fire

Water that was here before everything
Water that will remain when all is finished.

NATURE'S WASH DAY

Author Unknown

Mother Nature had a wash day
And called upon the showers
To bathe the dusty faces
Of the little roadside flowers.
She scrubbed the green grass carpet
Until it shone like new.
She washed the faded dresses
Of the oaks and maples, too.
No shady nook or corner
Escaped her searching eye,
And then she sent the friendly sun
To shine and make them dry.

WATER, WATER

(Tune: Twinkle, Twinkle Little Star)

Water, water from the stream
When it boils it turns to steam.

Water, water is so nice;
Freeze it cold, it turns to ice.

Cool the steam; warm the ice
It's water again, clear and nice.

WASHING CLOTHES

In soapy water
I wash my clothes,
(Make scrubbing motion.)
I hang them out to dry.
(Pantomime hanging clothes.)
The sun it shines
(Form circle above head with arms.)
The wind it blows,
(Wave arms and sway.)
The wetness goes into the sky.

IN PRAISE OF WATER

Nancy Byrd Turner
Source Unknown

Water is a lovely thing:
Dark and ripply in a spring;
Black and quiet in a pool,
In a puddle brown and cool;
In a river blue and gay,
In a raindrop silver-gay;
In a fountain flashing white,
In a dewdrop crystal bright;
In a pitcher frosty-cold,
In a bubble pink and gold;
In a happy summer sea
Just as green as green can be;
In a rainbow, far unfurled,
Every color in the world.
All the year, from spring to spring,
Water is the loveliest thing.

HEATING and COOLING

(Tune: Freres Jacques)
W. Stephenson

Heat the water
Heat the water
Watch it boil
Watch it boil
Now there is steam
Now there is steam
In the air
In the air

Cool the steam
Cool the steam
Watch the drops
Watch the drops
Now the drops are falling
Now the drops are falling
Just like rain
Just like rain

Cool the water
Cool the water
Its getting cold
Its getting cold
It's changing into ice
It's changing into ice
Brrr! Its cold!
Brrr! Its cold!

WEATHER

Eve Merriam
Source Unknown

Dot a dot dot dot a dot dot
Spotting the windowpane
Spack a spack speck flick a flack fleck
Freckling the windowpane

A spatter a scatter a wet cat a clatter
A splatter a rumble outside
Umbrella umbrella umbrella umbrella
Bumbershoot barrel of rain

Slosh a galosh slosh a galosh
Slither and slather a glide
A puddle a jump a puddle a jump
A puddle a jump puddle splash
A juddle a pump a luddle a dump a
Puddmuddle jump in and slide!

WAITING AT THE WINDOW

A.A. Milne

These are my two drops of rain
Waiting on the windowpane.

I am waiting here to see
Which the winning one will be.

Both of them have different names.
One is John and one is James.

All the best and all the worst
Comes from which of them is first.

James has just begun to ooze.
He's the one I want to win.

James is going slowly on.
Something sort of sticks to John.

John is moving off at last.
James is going pretty fast.

John is rushing down the pane.
James is going slow again.

James has met a sort of smear.
John is getting very near.

Is he going fast enough?
(James has found a piece of fluff)

John has hurried quickly by.
(James was talking to a fly.)

John is there, and John has won!
Look! I told you! Here's the sun!

THE RAIN

W. Kingdom-Ward
Source Unknown

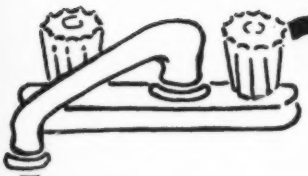
Pitter-patter
Pitter-patter
Listen to the rain!
Pitter-patter
Pitter-patter
On the window pane!

SOAP BUBBLES

Marie Louis Allen
Source Unknown

Dip the pipe in the suds just so;
Lift it out, and gently blow -
Dip and blow,
Dip and blow -
And through the air the bubbles go!

Bubbles, floating -- see them fall,
Each a shiny little ball.
Float and fall,
Float and fall;
And then they burst -- and that is all!



THE BUBBLE

Kenneth Hopkins
Source Unknown

I blew myself a bubble,
That was bigger than myself
And I floated up inside it
To the top-most shelf.

And there I saw before me,
With my own two eyes,
Half a hundred jam-pots
I blew myself a bubble
That was larger than Papa,
And he floated off inside it
To a place afar.

LIQUIDS

(Tune "Did You Ever See A Lassie")
Wendy Stephenson

_____ is a liquid
A liquid
A liquid
_____ is a liquid
It pours from a _____.

It's _____ and it's _____.
It _____ and _____.
_____ is a liquid.
It pours from a _____.

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